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The OIL WEEKLY and The COMPOSITE CATALOG for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG for the refining-natural gasoline industry

☆

LOOKING AHEAD
... with the Editor

BECAUSE of the war, the industry no longer thinks in terms of endless reserves of petroleum. This has made it conscious of the waste of natural resources. However, the prevention of gravity losses in crude, which is true conservation, is being sadly neglected. It has been estimated that the average loss in gravity between the well and the refinery approximates 1 degree API, which at a daily production rate of 4½ million barrels means 112,500 barrels daily.

Without financial sacrifices, oil producers can prevent this loss. The key to this situation will be discussed in a forthcoming article.

☆

THE OIL MAN'S CALENDAR

OCT. 3- 4	American Association of Oil Well Drilling Contractors, Blackstone Hotel, Fort Worth.
12-13	Texas Mid-Continent Oil & Gas Association, Houston.
23-25	Fifteenth Annual Meeting, IPA, Dallas, Texas.
NOV. 13-16	American Petroleum Institute, Stevens Hotel, Chicago.

THE OIL WEEKLY

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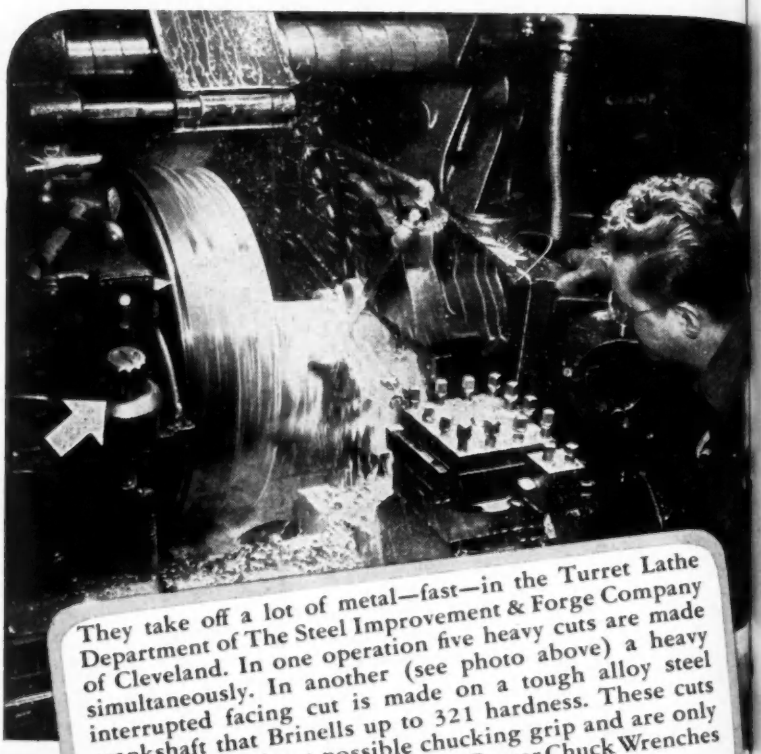

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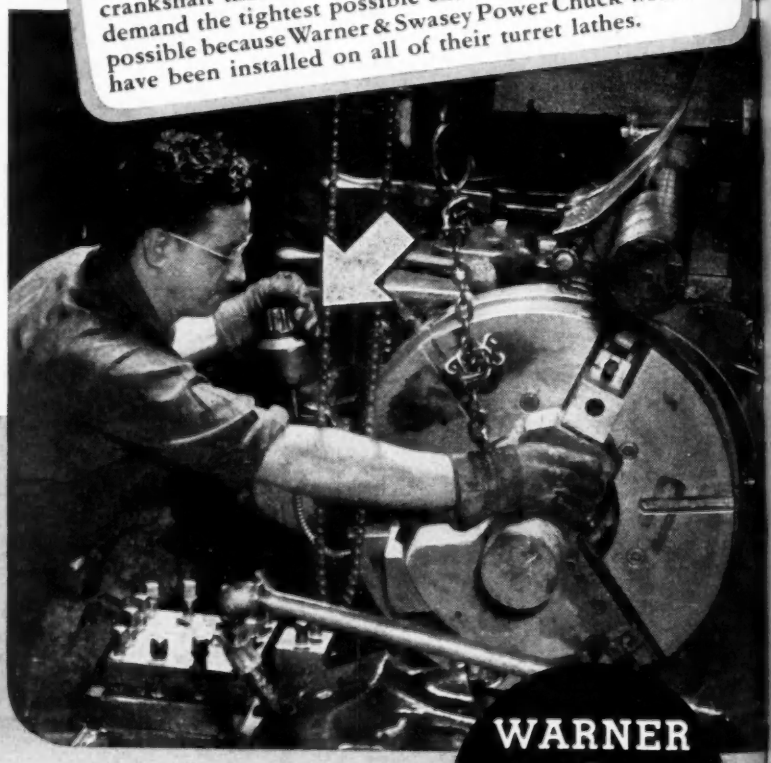

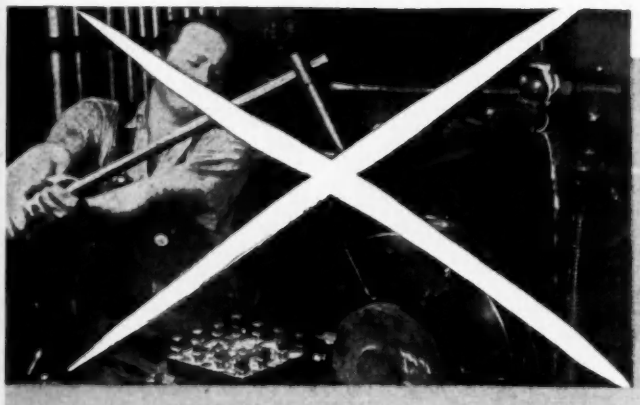

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The Changing Panorama

Problem of Meeting Increased Oil Need

AN ACUTE shortage of petroleum itself looms for the near future. Record production of crude oil in recent weeks has boosted United States output to practically its maximum level under efficient producing rates. Yet larger quantities of oil will be required when European invasion fighting becomes intensive over a wide area. The question of whether enough oil can be produced to satisfy materially enlarged military requirements is now before the industry.

The suggestion has been made that Texas production allocations be made on the basis of the producing capacity of individual wells rather than upon a field basis. This would permit better wells to produce larger quantities than now allowed, thus making up for some of the short comings of poorer wells. Certainly, there are many fields in the state which have individual wells capable of producing larger quantities without damaging the reservoir. Considerable additional oil might be made available, if this plan were adopted.

This suggestion seems the most logical possible solution to the problem of producing larger quantities of oil. However, it is not without its difficulties. The task would involve almost complete reallocation of production schedules, and for thousands of wells instead of for a comparatively small number of fields. This would be a sizeable job for the Texas Railroad Commission, which is as short-handed of experienced men as any organization or company. There would result major juggling of lease production rates, which in some instances might overburden existing tankage and other facilities. However, it is probable that this later problem can be overcome with proper timing of production and pipe-line schedules, to keep output moving. It might also create transportation troubles, requiring enlargement of pipe-line outlets from some fields if materially higher production resulted.

Because of these problems it might be well to consider the possibility of permitting transfer of allowables between wells, instead of putting the state on a strict per-well producing schedule. This plan has its disadvantages too, particularly from the standpoint of equities. However, it is permitted by the commission in some fields, and might be made workable in a number of others.

The problems that would arise from any attempt to shift from a field to an individual-well production allocation basis seem difficult, but with proper study and cooperative effort, are not insurmountable. The critical need for oil may make such a move a necessity. How else can production be increased immediately without damaging reservoir conditions excessively?

Louisiana Drops Processing Tax

WHEN daily throughput of Cities Service Refining Corporation's new refinery at Lake Charles, Louisiana, reached a volume of 50,000 barrels on May 15, 1944, operators of all refineries in that state were assured a reduction in taxes which will amount to roughly $200,000 each month.

The Louisiana legislature authorized, under Act 21 of 1942, Section G, that "whenever one or more refineries, having total capacity of not less than 50,000 barrels of petroleum daily shall locate in this state, and commence operations to such an extent, the assessment, collection, and enforcement of the license tax prescribed in this section shall cease and terminate."

The tax referred to is the one-cent-per-barrel manufacturing tax which applies to throughput of all refineries located within the state, including recycling but not including casinghead plants.

Cities Service Refining Corporation notified the governor, through the commissioner of conservation, that this provision had been met on May 15, and the governor has prepared a notification to the collector of revenue that the manufacturing tax has been rescinded as of June 16, 1944.

Nominal full capacity of the refinery is 70,000 barrels daily, but it is understood that after reaching full operation the plant will process nearly 80,000 barrels daily.

Projected quadrupling of the operating pressure on an old trunk pipe line—provided the system will stand a static water test to the new pressures—probably will not flush out of the woods a number of "hoot-owl" connections and taps, as frequently happened in the early days of East Texas when even a 50-pound increase was suddenly imposed on a gathering or field delivery system.

East Texas Could Produce More Oil

IN THE SEARCH for fields in Texas that have the ability to produce larger quantities, the possibility of increasing production of the East Texas field should be seriously considered. Under the present 23 producing days per month and the combined salt water disposal-pressure maintenance program, reservoir pressure has been maintained during the first six months of 1944. This together with prospects that less water will be returned in future months and that larger quantities of the produced water will be returned to the sand, indicate additional oil probably could be produced without disturbing the reservoir equilibrium materially. An additional producing day per month for the field would provide approximately 440,000 barrels more oil monthly, or nearly 15,000 barrels daily.

During the first six months of 1944, East Texas has produced 66,792,944 barrels of oil, or a daily average of 336,994 barrels. The bottom-hole pressure declined but 0.15 pounds per square inch between January 1 and June 1, 1944. The pressure has actually increased in recent months, as the volume of water returned to the producing formation has grown. Pressure data as of July 1 has not yet been announced, but past performance indicates it will be about the same as on June 1, and perhaps a little higher. These figures make it apparent that the pressure-maintenance program has been highly successful in keeping the field in good balance.

The East Texas Salt Water Disposal Company has three additional systems under construction, two of which it hopes to complete during July. Although the two new systems are designed primarily to ease the load of over-burdened existing systems, they undoubtedly will result in an increase in volume of water returned to the sand and should permit the company to extend gathering lines to new leases producing water. Thus, the return of more water to the producing zone is to be expected, which should be helpful in permitting production of additional oil without too much reservoir damage.

Another development that should be helpful in permitting additional oil production without excessive reservoir damage is the recent Texas Railroad Commission order reducing the amount

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of bonus oil given for return of water to the producing formation. It has had the effect of shutting down a number of wells producing large amounts of water, 158 wells producing almost 21,000 barrels of water daily being shutdown during May. Additional large water-producing wells should be abandoned, further curtailing water withdrawal rates.

The recent PAW relaxation on use of pumping equipment also should help, by permitting installation of pumping equipment on additional wells.

All these factors indicate East Texas can produce more oil without too much damage. Larger production from East Texas is more highly desirable than from other fields, because of its convenient location at the mouth of the Big-Inch pipe line, which is in need of additional supplies. Arrangements to deliver any increase in East Texas output to the Big-Inch would assure this vital system of an adequate supply for sometime.

Send strong men to Congress. A weak Congress imperils the nation. A strong Congress, sustained by an informed, interested and alert citizenry, protects freedom and is vital to national safety.

—JOHN R. MCCARL
former U. S. Comptroller General

Much Wildcatting For West Oklahoma

AS A RESULT of recent important oil discoveries, operators have spent approximately $9,000,000 to lease 3,000,000 acres west of Oklahoma's Nemaha Ridge. Drilling obligations are said to call for about 100 future wildcat tests, with wells in some instances slated to go to 15,000 feet, the latter in the Anadarko Basin region. Development, however, will be delayed because of the scarcity of heavy tools.

A total of 136 blocks have been taken in 20 counties of Western and Northwestern Oklahoma, extending from the granite uplifts of the Wichita Mountains on the south to the Kansas line on the north, and from the Nemaha trend in Central Oklahoma on the east to the Texas Panhandle boundary on the west, according to a survey just concluded by Claude V. Barrow, oil editor of **The Daily Oklahoman.** Kingfisher County leads with 430,000 acres, followed by Grady with 327,000 acres, Grant with 300,000, Canadian with 248,000, Garfield with 236,000, Caddo with 226,000, Washita with 225,000, Ellis with 220,000, and with Woods, Blaine, Alfalfa, Beckham, Custer, Dewey, Greer, Harper, Kiowa, Major, Roger Mills, and Woodward having smaller amounts.

Many geologists believe Western Oklahoma will develop into an oil-producing province equal to the eastern half of the state. They think all the horizons that produce east of the Nemaha Ridge will be found to the west, and that they will be thicker and likely to carry more oil. So far, such beliefs are borne out by the discovery of major oil pools including West Edmond, West Moore, West Sentinel and Washington. The producing levels, however, will be deeper. The new Washington field of McClain County, the site of Oklahoma's deepest producer, has a well flowing from the second Wilcox at 11,625-45 feet.

Texas Oil Outlay Passes Billion Mark

DUE to expanded wartime operations and mounting costs, annual expenditures of the oil industry in Texas during 1943 passed the billion dollar mark for the first time, according to the Texas Mid-Continent Oil & Gas Association.

The association says that reports from Texas operators indicate the cash outlay in 1943 totaled $1,109,000,000 compared with $862,000,000 in 1942, the second highest year. "The industry paid out $352 million in wages and salaries in 1943 compared with $249 million in 1942. Royalty payments rose from $74 million in 1942 to $96 million in 1943. Federal taxes jumped from $43 million to $71 million, and state and local taxes rose from $94 million to $100 million."

A Fundamental Lesson

IN A STATEMENT before the National War Labor Board recently, Enders M. Voorhees, chairman of the finance committee of the United States Steel Corporation called attention to a fundamental lesson for all who contemplate the problem of capital and labor.

"The processes of production exist only for the creation of more and better goods. This matter of producing more and better goods goes to the very heart of our national life and intimately concerns all of us. 'More and better' has lost face in recent years as being just a sounding off. But there is a deeper meaning which goes to the spirit of America, for the opposite of 'more and better' is 'less and worse.'—I am emphasizing this point because of a growing thought or attitude that a corporation is a thing of itself and even a system of power, and therefore can be charged with certain responsibilities which in fact are not within its ability to discharge.—The plain truth is that neither U. S. Steel nor any other business corporation has any mystical power to operate and to hire men if it has no customers, nor any mystical power to turn out first-class, well-priced goods with worn-out tools, or against costs beyond the control of management. This truth ought to be obvious, but apparently it is not so to at least some of our citizens, who hold the notion that a corporation has within itself the independent economic power to dictate price, quality and quantity to the customer and therefore the power to pay taxes, wages and other costs without limit."

Petroleum Uses Expanding Daily

IT WOULD be interesting to know how much money the oil industry spends for research. Certainly the figure runs into many millions of dollars. Some of the largest laboratories in the United States are owned and operated by oil companies. Standard Oil Development Company, research and development affiliate of the Standard Oil Company (New Jersey), for instance, put $6,500,000 into research during 1943, most of it on wartime problems.

Most of us think of oil as the source of fuel and lubricants and stop there. Some specialized war uses include special oils for flame throwers, incendiary bombs, rust preventives, smoke generators, oil products to protect men from wind and water and sun, from cold, from insects and from disease. Research is constantly lengthening the list of uses, and while the appropriations for further study may be decreased when the war is over, it will be natural for wartime developments to be turned toward civilian benefit.

Oil has been called an agent of social and economic advancement. Out of wartime uses are bound to come new applications to further justify the ranking place of this natural resource as a force for progress.

"A wise oil policy for the United States and for the world at large would include a veritable crusade to develop the oil resources of the earth."

OIL IN THE EARTH,
by Wallace E. Pratt

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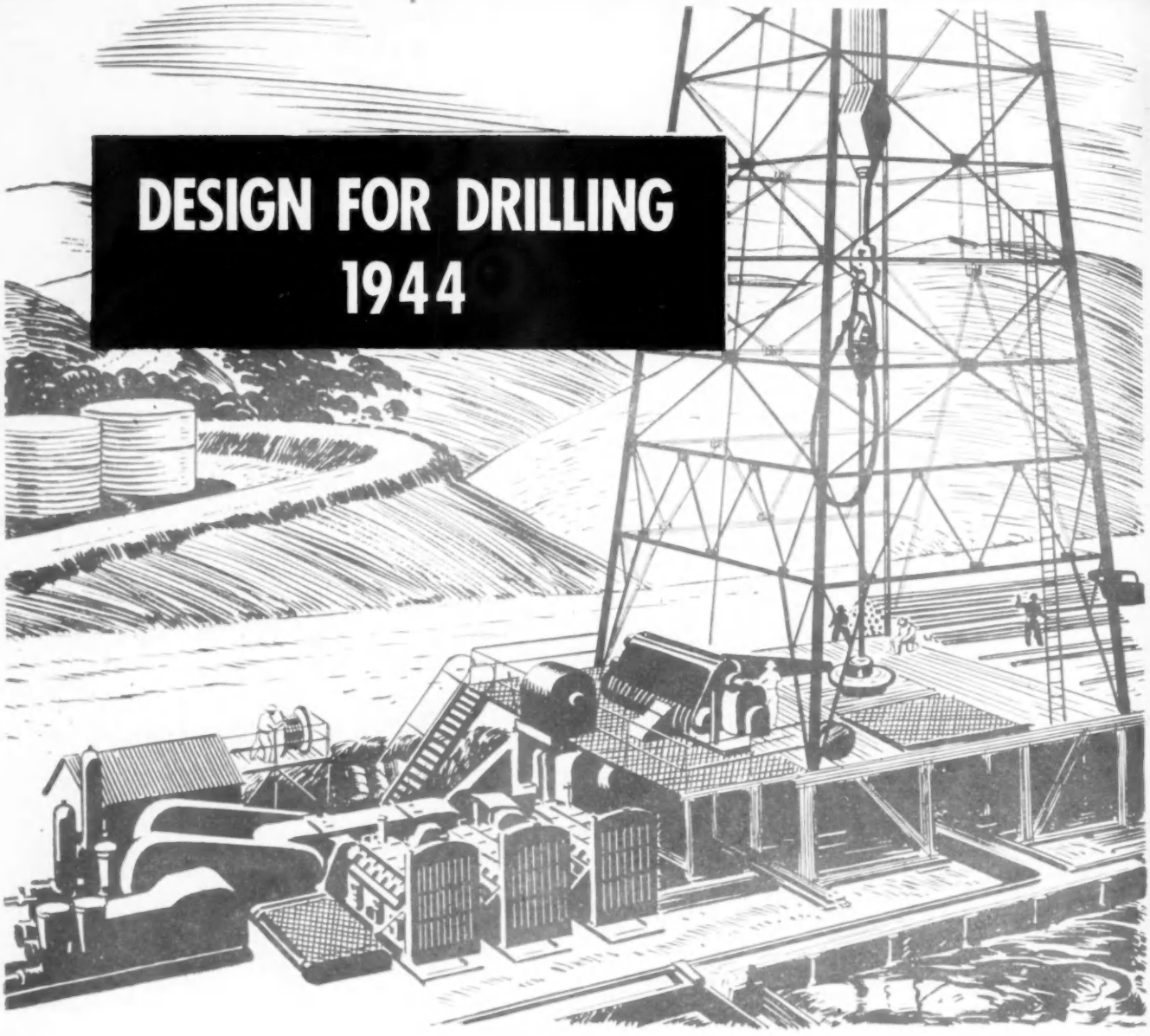

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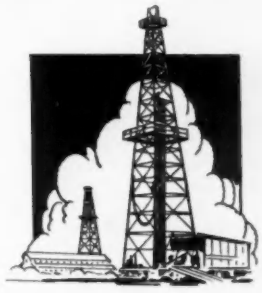


By BERTRAM F. LINZ, Washington Correspondent

LONG-DELAYED announcement of adoption of a subsidy plan for the relief of stripper-well operators marked the holiday week in Washington, otherwise devoid of important oil news.

Rate of Subsidy—Under the Vinson-approved OPA program, Defense Supplies Corporation will pay a subsidy of 75 cents per barrel for Pennsylvania-grade production and from 20 to 35 cents per barrel for other fields in which average output per well is less than 9 barrels a day.

Compensation for Purchasers—Still to be disclosed in regulations shortly to be issued by Defense Supplies Corporation is the machinery by which the first purchasers of the stripper-well production will be compensated for the higher prices they will pay for the crude—what papers they will have to submit, at what intervals they will receive their money, etc. By dealing only with the first purchasers of the oil, DSC will be able through about 700 accounts to handle a subsidy for more than 280,000 wells in 900 fields throughout the country.

Tank Car Shortage—The military situation continued during the week to be a source of concern. With many tank cars diverted to other services, the Office of Defense Transportation called upon the companies to load and ship every day in the week, limited the supply of cars to a one-day basis for each company and strengthened its prohibition against removal of cars from the Eastern oil service without ODT approval, and demanded that the railroads cut the turn-around time and speed up schedules for oil trains.

Cut Lead Content—In another sector of the military problem, PAW, having ascertained that its recent cut in premium gasoline production (THE OIL WEEKLY, June 26) has failed to produce enough tetraethyl lead to provide additional aviation gasoline production to permit the Army to rebuild its depleted overseas reserves, is reportedly considering a reduction in the lead content of house-brand gasoline, probably bringing it down to 70 octane.

Stripper-Well Subsidy Effective August 1; West Texas Not Increased

Stripper-well subsidies ranging from 20 to 75 cents per barrel, proposed March 17, last, by the Office of Price Administration and held under consideration by Stabilization Director Fred M. Vinson until the end of the Congressional controversy over extension of OPA, were approved last week to go into effect August 1.

A system for handling the subsidies through the first purchasers of the oil will be set up by Defense Supplies Corporation, to which the task of distributing an estimated $50,000,000 a year to producers was assigned by Vinson with the approval of President Roosevelt.

OPA's answer to the industry's demand for a general price increase calls for the payment of the top subsidy of 75 cents per barrel to producers in the Pennsylvania-grade fields in New York, Pennsylvania, Ohio and West Virginia, where wells average about ½-barrel per day.

In other areas, a 35-cents-per-barrel subsidy will be paid on the production in fields which average less than 5 barrels per well per day, with a 25-cent payment in fields averaging 5 or more but less than 7 barrels, and 20 cents will be paid on production in fields averaging 7 or more but less than 9 barrels.

A directive issued to Vinson to put the subsidy in effect also authorized the price administrator to increase existing maximum prices of crude oil by not more than 35 cents per barrel on oil produced in fields where the daily average per well production is 9 barrels or more, if it is found that (a) because of certain high-cost factors, the maximum price for crude produced at a particular field is below the average cost of production and (b) the cost of production is not out of proportion to the output obtainable.

To Certify Fields

The fields to which the subsidy is to apply are to be determined by OPA in consultation with PAW, and when the subsidy is granted the price administrator is to report the effective date and amount of the increase to the Secretary of Commerce.

At the secretary's direction, Defense Supplies Corporation will reimburse purchasers for the additional amounts expended on crude oil from the certified fields, and also is to make premium payments to any producer of crude eligible for the subsidy for oil produced and not sold, but refined, consumed or otherwise utilized by the producer.

OPA officials have contended that this system will take care of the vast majority of operators who, by reason of small production, have not been able to break even on their operations, and asserted that it will prevent the abandonment of thousands of wells which owners had threatened to close if relief was not provided.

It is estimated that the subsidies will cover a daily production of 404,000 barrels of crude from 280,000 wells in approximately 900 fields outside of California. The system, however, will be easy to administer because only about 700 first purchasers will be involved in dealings with Defense Supplies Corporation.

Approximately 80 percent of all the stripper wells will be covered by the field subsidy, including the great majority of operators using secondary-recovery methods, it was said. The remaining 20 percent of the strippers, representing high lifting cost or high water-oil ratios, will be dealt with on an individual basis, either through field committees or on direct petition.

It was explained that no provision has yet been made for the relief of California stripper operators because of the inability of OPA to obtain from any reputable source the necessary information. California interests asked for data referred OPA to PAW, but the latter's records did not adequately cover the situation. However, California operators will be brought under the system as soon as the necessary facts are provided, and it is estimated that approximately $1,200,000 a year will be required for subsidies in that state, which amount has been included in the over-all estimate of the cost, placed by OPA officials at more than the $50,000,000 estimated by Defense Supplies Corporation, but not exceeding $60,000,000.

West Texas Exception

Several other factors in the oil situation are currently under study in OPA.

Consideration is being given to the abandonment of the policy of making increases in specific fields to bring ceiling prices up to those for nearby production, it being believed that the sub-

sidy plan will take care of such situations. The great majority of the fields so treated have been small, and their production in most cases has averaged less than 9 barrels a day per well.

The outstanding exception, and a problem to which OPA has given considerable thought, it was explained, is in West Texas where, because of lack of transportation facilities, sour crude has been for years at a marked price disadvantage. At the present time, however, there is little possibility of providing an increase for that oil since, although transportation has been materially expanded. The sour crude is being used by refiners under protest because of fears, they claim, of serious deterioration to equipment.

Studies Under Way

The West Texas situation has been under consideration for the past two months, and studies are now under way, in the shape of plugs in pipe lines, to determine the corrosive effect of the oil on metal. The matter also was discussed with PAW officials, who expressed objection to any price increase on the ground that the sour crude now is backing up on the producers at a rate variously estimated from 80,000 to 180,000 barrels a day and fear that a higher price would make it impossible to move any material volume whatever. Accordingly, it has been decided to hold action in abeyance until the West Texas production is accepted by the Refineries in District 2 at somewhat near capacity of the fields to produce.

Another situation has been presented by the edge wells in the East Texas field, which are producing a large volume of water in ratio to oil recovered at a high cost. It was said that there are comparatively few such wells and that most of the owners also have wells nearer the heart of the field, and no satisfactory formula has been developed for the relief of such operators. Under normal conditions, it was said, such wells would be abandoned as a matter of operating efficiency when it became uneconomic to operate them. OPA officials admitted that in some fields which will be eligible for the stripper-well subsidy, operators with greater than average production will have a windfall, but it was felt that such producers should not be penalized for efficient operation, while at the same time their exclusion would offer a difficult administrative problem under the system of applying the subsidy by fields. It was pointed out, also, that if an operator with a half-barrel or so more than average production was barred, his neighbors with lower production might readily receive more for their lower volume of oil than he did for his greater output.

1943 Basis

In an explanatory statement outlining the subsidy policy, Vinson said that eligibility for the premium bracket will be determined on the basis of the field's production during a representative period of 1943, or during 12-month periods preceding the application for eligibility.

"Prolongation of stripper-well production was one of several considerations that moved the Petroleum Administrator for War to recommend last year a general 35-cent-per-barrel increase in the price of all crude oil—from flush as well as stripper fields," it was stated. "The 35-cent general increase was denied by the Director of Economic Stabilization on October 29, 1943. A general 35-cent increase would have cost consumers at least $500,000,000 annually. Of this sum upwards of $175,000,000 would have been paid by the federal government. This compares with the estimated cost to the government of approximately $50,000,000 annually of the premium-price plan which is designed to give increased financial return only on the small-yield fields.

"Whereas any general increase in crude prices would require increased product prices (gasoline, kerosine, fuel oil, lubricating oil, etc.), threatening the entire stabilization program, the premium-price plan will involve no increase in product prices. Thus the plan conforms to the President's 'hold-the-line' order of April 8, 1943."

Estimate for Oklahoma And Kansas Subsidy Pay

The subsidy plan for stripper oil wells as announced by the Defense Supplies corporation will affect approximately 90 percent of Oklahoma and 62 percent of Kansas oil wells. Practically all production in Northeastern Oklahoma in the stripper areas of Nowata, Rogers, Craig and Washington Counties will receive the maximum 35 cents per barrel subsidy. In Osage County where 7960 wells produce 29,917 barrels daily, or less than four barrels per well, the 35 cents per barrel subsidy will be paid to practically all producers.

In the Oklahoma stripper areas a total of 52,104 producers run about 335,000 barrels daily or an average of 6.4 barrels per well which will entitle producers to 25 cents per barrel or about $84,000 per day.

Kansas operators will also benefit substantially from the subsidy. Of the 25,955 producing wells in Kansas, approximately 16,000 produce an average of 2.5 barrels per day and will entitle owners to the top subsidy of 35 cents per barrel or approximately $15,000 per day. In Eastern Kansas 6544 wells produce an average of 5.5 barrels each day and will therefore be entitled to 25 cents per barrel or approximately $8700 per day.

PAW About to Complete Last Seven Projects of Pipe Line Construction

The last seven projects on PAW's pipe Line-construction program are scheduled for completion within the next few months.

During the current month, Project No. 23, Yale Oil Corporation's Elk Basin line, is expected to be completed, the 6-inch lines between Billings and the Laurel refineries and from Elk Basin to Warren having been finished, and construction started on an 8-inch line from Warren to the Yellowstone River near Billings.

Also to be completed this month is project No. 28, The Texas Company's 34-mile, 6-inch products line from Lockport, Illinois, to East Chicago, Indiana, on which 71 percent of the pipe has been strung and 49 percent laid, and the Lockport pump station placed under construction.

Status of the other projects was reported by PAW, as follows:

No. 24: Stanolind Pipe Line Company's Elk Basin-to-Casper line. Construction work has been started and the project is scheduled for completion in September.

Project No. 25: Ohio Oil Company's 115-mile 8-inch products line from Robinson, Illinois, to Indianapolis. Actual construction to start in September, to be completed in October or November.

Project No. 26: Pan American Pipe Line Company's 36-mile 8-inch crude line from Willamar to Port Isabel, Texas. Pipe deliveries have started and crews will begin welding shortly. Project scheduled for completion in August.

Project No. 29: Colonial Beacon Oil Company's 36-mile 4- and 6-inch products line from Everett to Methuen, Massachusetts. Purchase of right-of-way progressing. Completion date uncertain.

Project No. 30: Stanolind Pipe Line Company's 41 miles of 16-inch loops along the crude-oil system between Drumright, Oklahoma, and Sycamore, Kansas. Construction to start about July 15 and be completed about September 1 at an estimated cost of $1,525,700. New loops will increase capacity of system into Humbolt, Kansas, from 124,000 to 134,000 barrels daily.

Changes Made When Labor Counselor Leaves PAW

Frederick H. Harbison, who has been labor counselor for PAW since March, 1943, has resigned to return to his post at the University of Chicago and will be succeeded by George E. Dewey, on leave from Standard Oil Company (Indiana) since October, 1942, to serve as deputy labor counselor.

In OPA, A. R. Whitman has given up his post as head of the fuel rationing division to become consultant attached to the staff of the deputy administrator, and has been succeeded by John G. Neukom, formerly assistant director of the division. Neukom was formerly with the management engineering firm of McKinsey, Kearney & Company, Chicago, and Whitman, who served with the Office of War Information before joining OPA last February, was with Benton & Bowles, New York advertising agency.

Appointment of William C. Frysinger and John D. Kurtz as assistant directors of the foreign supply and distribution division was announced by PAW July 5.

Frysinger, formerly with The Atlantic Refining Company in Philadelphia, joined PAW last February, and Kurtz, also with Atlantic, joined the PAW staff in August, 1941. Both have had experience abroad, Frysinger as managing director of the branch in Hamburg, Germany, from December, 1928, to November, 1939, and Kurtz as assistant manager of The Atlantic Oil Storage Company in Antwerp, Belgium, from July, 1932, to December, 1937, and for a short time thereafter as assistant manager at Hamburg, Germany.

Efficient Maximum Use of Tank Cars Urged as War Calls for More Oil

Sharp increases in military demands for oil and products and reductions in the number of tank cars available for the Eastern petroleum service through diversion to other routes and uses last week brought from the Office of Defense Transportation an urgent plea to oil companies and railroads to make maximum efficient movement of vital war supplies.

All oil companies were notified by ODT Director J. Monroe Johnson July 6 that tank-car loadings of military requirements must be given preference over all other tank-car shipments, and at the same time the railroads were instructed to transport those shipments with the greatest possible celerity.

Terming the tank-car situation acute, Johnson outlined a program designed to insure a steady flow of oil and gasoline to the fighting fronts. The number of cars in Eastern service fell from 63,452 to 60,143 between May 15 and June 15, he pointed out.

"There is a pressing need for the utmost utilization of transportation facilities in order to meet the demands of the military for petroleum and its products, he told the oil and railroad executives. "These demands have reached a new peak in quantity and urgency."

Under the ODT program, oil companies are required to carry on loading and shipping operations every day in the week, including Sundays and holidays; available tank cars are limited to a one-day supply for each company; strict adherence will be required to the "freeze" order of December 29, 1942, providing that no cars can be removed from the Eastern oil service without ODT approval, and tank cars may no longer be taken from East Coast service for West Coast use without permission from the ODT tank car division.

Responsibility of the railroads will be to speed up deliveries by reducing the turnaround time of all tank cars. When undue delays in movements of petroleum trains are encountered, changes in routings will be made to insure maintenance of schedules.

Convention Directive May Mean No API Fall Meet

Total abandonment of all trade conventions, shows and meetings for at least the remainder of this year has been asked by Transportation Director J. M. Johnson in a letter recently sent out to the executives of all trade associations.

At least four oil meetings already have been scheduled for this fall, including the annual meeting of the American Petroleum Institute, to be held in Chicago in November.

Although, in the past, the ODT has asked the suspension only of all meetings not directly connected with the war, it is now asking for the calling off even of war-connected gatherings because of the burden imposed on the railroads by the invasion of Western Europe and the even heavier load which will come when wounded men evacuated from the theaters of war must be carried in large numbers from ocean ports to military hospitals.

Transportation officials are gravely concerned over the situation because of the failure of the public to accede to admonitions and pleas to cut out nonessential travel, and are reported to be considering the imposition of priorities in the event conditions become critical. Under such a system, persons with real reasons for traveling would be given first consideration in the allocation of space on trains, but so far this step has been avoided because of the complexities and difficulty of administering a priorities system.

Oil Industry's Idea of Foreign Oil Policy Voted

By a vote of 2084 to 40, the membership of the United States Chamber of Commerce has approved a policy declaration calling for the adoption by the government of a foreign oil policy patterned along lines long advocated by the oil industry itself.

The chamber's program holds that "our government should foster private enterprise of its nationals in foreign exploration, production, transportation, refining and marketing of petroleum and its products. It should refrain from entering directly or indirectly into the oil business."

Union Producing Company Selects Vice President

Walter H. Spears, formerly general superintendent of the land, geological and mapping departments, has been elected vice president of Union Producing Company, Shreveport.

W. H. Spears

Spears entered the employ of a predecessor company in January, 1931, as a geologist, at Houston. In 1937, he was promoted to assistant superintendent of the exploration department, and two years later became the district manager in charge of Houston district operations of the company. In November, 1940, he was appointed general superintendent of land, geological and mapping departments.

Spears was graduated by the University of Wyoming in 1925, having majored in geology, and also completed a year of graduate work there. He was employed by Huasteca Petroleum Company in geological work in Mexico three years, then was transferred to Pan American Petroleum and Transport Company in New York as assistant to the chief geologist. In 1929, he was placed in charge of his company's geological work in Nicaragua, where he remained for a year, prior to his connection with Union Producing Company.

July Demand Calls for 4,603,200 Barrels Daily

A July production of 4,603,200 barrels of domestic crude daily will be required to meet market demand, it was forecast last week by the Bureau of Mines. Certifications by PAW for the month call for an output of 4,606,100 barrels.

The bureau estimated that motor-fuel demand this month will be 67,700,000 barrels, or 19 percent higher than the actual demand for July, 1943. Its crude-oil production estimate, however, was only 10.9 percent higher than the actual last year.

The bureau commented that data now available for the second quarter of 1944 indicate that motor-fuel demand and supply closely approximated its forecasts, but the recent expansion in war requirements has led to further large gains in refinery runs and the demand for domestic crude may prove to be over 2 percent greater than was anticipated. As a result of the larger runs, the gasoline yield for the quarter is not expected to exceed 39 percent and the supply of fuel oils is seen as materially increasd.

Price Increases Allowed Two Fields in Louisiana

Oil producers in two small fields in Louisiana and Texas, respectively, were given increases in ceiling prices by the Office of Price Administration July 6, effective July 10.

At the Vacherie (Hester) field in St. James Parish, Louisiana, a ceiling of $1.30 per barrel for 40-gravity and over, with the customary 2-cent reduction for each degree of gravity under 40, will mean a 9-cent increase on approximately 70 barrels a day of 39-gravity crude, but no increase for about 30 barrels of distillate of approximately 45-gravity, for which the producer had already been receiving $1.30 a barrel.

A 12.5-cent increase was provided for the Alta Mesa field, Brooks County, Texas, where a ceiling of $1.45 per barrel was set for 40-gravity crude and over, with the customary 2-cent differential for lower-gravity crude. OPA explained that improvement has been made in the delivery facilities for this field and it is expected that, instead of the 250 barrels daily which were handled last year, approximately 1600 barrels a day can now be moved from the field.

Twenty-four Tankers and Barges Added During June

Twenty tankers were added to the nation's oil fleet in June, it was announced July 5 by the Maritime Commission.

Six of the tanker deliveries were made by the Kaiser Company, from its Swan Island, Oregon, yard, and another six came from Sun Shipbuilding and Dry Dock Company at Chester, Pennsylvania. Four tankers were built by Alabama Dry Dock and Shipbuilding Company, Mobile; three by the Marinship Corporation, Sausalito, California, and one by Welding Shipyards, Inc., Norfolk, Virginia.

Four concrete barges also were delivered during the month, three by Barrett & Hilp, San Francisco, and the fourth by the MacEvoy Shipbuilding Corporation, Savannah.

Allocation of Production Changes in New Directive

PAW last week superseded Recommendations 19, issued December 11, 1941, with Petroleum Directive 19, both providing the procedure for the allocation of production from the various fields, pools and wells of District 5.

Few changes of any importance are made in the functions of the industry production committee of the district beyond a change in the method of appeal extended to any person seeking an exception.

Applications for exceptions, heretofore filed with the district office, now must be filed with the director of production of PAW in Washington.

New Geologic Maps Issued By United States Survey

New geologic maps on a number of fields in which additional or new oil or gas production may be possible have been issued by the United States Geological Survey, for sale through the Washington office.

The new maps cover the Rangely field in Rio Blanco County, Colorado (40 cents each), where nine square miles on the crest of the anticline are seen as favorable for production from the Weber sandstone at around 6000 feet; the second Berea sand in eastern Ohio (40 cents), where additional gas production may be obtained; the Quitman fault zone in Mississippi and Alabama (25 cents); the oil and gas fields of Wyoming (50 cents); the Sierra Nacimiento in Sandoval and Rio Arriba Counties, New Mexico (25 cents), viewed as a possible source of oil and gas; and the oil and gas possibilities of the plains adjacent to the Little Rocky Mountains in Montana (25 cents), where oil and gas possibilities are believed to exist.

Spacing Rules Asked For New Lone Grove Pool

The Texas Company, discoverer of the Lone Grove pool, has applied to the Oklahoma Corporation Commission for an order establishing 20-acre uniform well spacing in the new shallow field which is located in Township 5 south, Range 1 west, Carter County. The company has one producing well from the Lower Bayou sand at 2766-2789 feet and owns 32.29 percent of the acreage included within the indicated limits of the pool. It asks that the order establish triangular division of 40-acre tracts for drilling units with wells located as near the center of each 20 as practicable.

Russia's "Second Baku" Region Covers Wide Area

Russian newspapers and technical journals are devoting much space to reports of mounting discoveries of petroleum in what they call the "Second Baku" area—a stretch of territory extending for 500 miles or more in a curving line from the Saratov region northeastward almost to Perm.

More than 100 separate fields have been opened along this trend since the first important discovery in 1932 at Ishimbayevo, 50 miles northwest of the new refining center of Ufa. It is claimed that these fields, of which Ishimbayevo is still the leading producer, are now yielding a total of more than 50,000,000 barrels annually, and that pipeline, rail, barge and refining facilities that have been built are adequately handling this new crude supply.

Refining plants, said to be as large as those at Ufa, are reported to be in full operation at Syzran and Saratov, on the Volga River. Recent discoveries in southern Perm have inspired plans for constructing more refining facilities there.

Opening this new producing region means that Russian oil fields now extend from the sub-arctic Pechora basin to the Caspian Sea, along a 100-mile strip lying west of the Ural Mountians. Soviet experts who have estimated the reserves of the new Ural-Volga, or Second Baku, area to be at least 20 billion barrels, have announced plans for drilling 600 wells per year in proven or semi-proven localities.

Further details concerning oil activities in Russia are given in the article commencing on page 36 of this issue.

Coast Guard Award Is Given to Oil Industry

The United States Coast Guard recently paid an invasion tribute to the oil industry through award of its security shield of honor to the Petroleum Industry War Council. Rear Admiral L. T. Chalker, acting commandant of the Coast Guard, made the presentation to W. R. Boyd, Jr., chairman of the council.

The shield of honor was the second to be awarded by the Coast Guard; the first was given to the National Board of Fire Underwriters for port protection work. The award was originated by the Port Security Division of the Coast Guard which is charged with protecting vessels, and water-front facilities.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED July 8	July 1
Alabama	100	100
Arkansas	80,400	80,300
California	853,400	848,100
Colorado	8,350	8,400
Illinois	207,600	208,200
Indiana	12,600	12,950
Kansas	266,250	274,400
Kentucky	20,900	21,800
Louisiana	363,200	363,200
North Louisiana	74,200	74,200
South Louisiana	289,000	289,000
Michigan	49,000	47,200
Mississippi	44,150	41,500
Missouri	100	100
Montana	26,350	24,380
Nebraska	900	1,000
New Mexico	108,300	108,250
New York	13,600	12,900
Ohio	7,300	7,500
Oklahoma	337,900	338,300
Pennsylvania	38,300	38,600
Tennessee	35	35
Texas	2,037,500	2,037,500
Upper Gulf Coast	528,900	528,900
East Texas Field	360,900	360,900
Rest of Eastern Texas	145,000	145,000
Lower Gulf Coast	215,800	215,800
Southwest Texas	77,550	77,550
South Central Texas	19,800	19,800
West Texas	448,050	448,050
North Texas	149,500	149,500
Panhandle	92,000	92,000
West Virginia	8,200	8,200
Wyoming	91,300	91,450
Total United States	4,575,735	4,574,365

Again Suggests Pipe Lines Be Used for Postwar Gas

Use of the 24-inch and 20-inch War Emergency pipe lines after the war to move natural gas from Texas to the New York-New Jersey-Philadelphia area is proposed by Sidney A. Swensrud, vice president, Standard Oil Company (Ohio), in the *Harvard Business Review*.

Swensrud says extensive tanker construction indicates we may have a surplus instead of a shortage of tankers at the end of the war, and that this creates "considerable doubt that these lines would continue to be used for moving crude petroleum or petroleum products to the East Coast."

The Eastern area, where the lines terminate, contains "the heaviest concentration of population in the United States and is not now served with natural gas. At the other end of the lines lie the greatest discovered natural gas reserves in the United States, if not the world, and many fields making up this reserve have little market outlet for their gas."

There are adequate supplies available for the lines, declares Swensrud. "On the basis of an average of 100 to 120 billion cubic feet per year, the gas marketed through these lines would amount to only 3 percent to 4 percent of the total consumption of natural gas in the United States at present . . . and the total deliveries through the lines in a 10-year period would be equal to only about 1 percent of the estimated size of present known reserves of gas in the United States.

"The costs of gas at the source plus the cost of transportation through the War Emergency lines to the destination, including return on investment at the highest levels permitted, would make it possible to deliver the gas into Eastern distribution systems at an estimated amount of 23 cents to 26 cents per thousand cubic feet. On the basis of such delivered costs, there appears to be no question but that attractive rates to consumers, comparable to those in other Central-Eastern areas where conversion to natural gas has occurred, could be established."

Equipment Manufacturing Company Plans Drilling

Aro Equipment Company, Bryan, Ohio, manufacturers of pneumatic tools and lubricating equipment, has acquired a block of leases in Stephens County, Oklahima, and contracted with Wichita River Oil Company to drill its first test. Entry of Aro Equipment Company into oil operations follows the practice estabilshed by a number of companies which are amending charters to permit them to engage in the oil business.

District Drillers' Meets Report Good Attendance

About 40 drilling contractors and representatives attended the American Association of Oilwell Drilling Contractors district meeting in Los Angeles, California.

A district meeting held in Odessa, Texas, on May 25, was attended by more than 80 contractors.

Brad Mills, executive secretary of the association, states that district meetings will be held periodically in all of the principal producing areas.

District 3 Fields Nearing Maximum Efficient Rate

Ivy Committee report shows rate for next six months is only 23,461 barrels daily more than June production whereas December mark was 164,381 barrels in excess of then-current production

By GEORGE O. IVES
Staff Writer

OIL fields in PAW District 3 can sustain a daily producing rate during the next six months of only 23,461 barrels more than their estimated June output and still remain within their ability to produce at efficient rates, whereas on last December 1 the district's producing ability was set at 164,381 barrels greater than current production, according to the July 1 report of the Subcommittee on Reserves and Development of the District 3 Production Committee, popularly known as the "Ivy Committee."

The study shows that with all fields producing at efficient limits, the 6-state district can produce 2,640,514 barrels daily. Estimated June production was 2,617,053 barrels daily, or just 150 barrels less than the committee's estimate of December 1 producing ability (THE OIL WEEKLY, December 13, 1943). During the 7-month period since the preceding study, producing ability of the district has increased only 23,311 barrels due to new completions and discoveries, while peak consumption demands have forced production increases amounting to 164,231 barrels daily.

These figures indicate that, as a whole, District 3 production is fast approaching its maximum efficient ability. Because other national districts have been producing at or above their estimated efficient producing capacity, this means that the nation also does not have any safe margin of excess producing ability.

Comparison of the Ivy committee's estimates on producing ability with production figures reveals that while the entire district has only 23,461 barrels excess producing ability, certain areas, principally in Texas, can produce much more than that, overproduction in other districts reducing the over-all excess. West Texas alone, could contribute 53,859 barrels more crude, and District 6 of East Texas an additional 28,248 barrels. As of December 1, West Texas could produce 151,521 barrels more, but subsequent allowable increases have reduced the excess. In December, East Texas had 24,472 barrels additional oil over December production rates. Greatest overproduction is in Louisiana, where the committee estimates 24,901

TABLE 1

Comparison of District 3 Trend in Ability to Produce with Production Rates

(All figures in barrels per day)

STATE OR DISTRICT	Committee Determination of Ability to Produce		Daily Crude Production			Additional Oil Available		
	Dec. 1 1943	July 1, 1944*	Dec., 1943	April, 1944†	Est. June, 1944	On Dec. 1 Over Dec. Production	On July 1 Over April Production	On July 1 Over June Production
Alabama	0	300	.....	35	100	.....	+ 265	+ 200
Arkansas	72,020	69,364	71,156	72,505	72,700	+ 864	— 3,141	— 3,336
Uncontrolled Fields	19,565	17,960	17,388	19,565	19,500	+ 2,177	— 1,446	— 1,540
Controlled Fields	52,455	51,404	53,768	53,099	53,200	— 1,313	— 1,695	— 1,796
Louisiana	338,575	336,799	347,800	347,308	361,700	— 9,225	— 10,509	—24,909
North Louisiana	59,995	55,429	68,100	65,200	73,700	— 8,105	— 9,771	—18,271
South Louisiana	278,580	281,370	279,700	282,108	287,900	— 1,120	— 738	— 6,530
Mississippi	36,342	40,070	44,900	41,231	43,400	— 8,558	— 1,161	— 3,330
New Mexico	101,884	109,344	112,746	112,586	108,100	— 10,862	— 3,242	+ 1,244
Northwestern	1,112	1,067	1,238	1,312	1,300	— 126	— 225	— 233
Southeastern	100,772	108,277	111,508	111,366	106,800	— 10,736	— 2,997	+ 1,477
Texas	2,068,382	2,084,637	1,876,220	1,925,313	2,031,053	+192,162	+159,324	+53,584
District 1	22,186	21,226	21,416	22,039	22,345	+ 770	— 813	— 1,119
District 2	137,270	138,069	132,830	131,069	142,359	+ 4,440	+ 7,000	— 4,290
District 3	477,621	476,451	471,616	480,890	489,347	+ 6,005	— 4,439	—12,896
District 4	176,354	183,738	174,961	185,739	186,423	+ 1,393	— 2,001	— 2,685
District 5	43,431	42,776	35,497	36,063	41,408	+ 7,934	+ 6,713	+ 1,368
District 6	482,861	487,240	455,389	451,238	458,992	+ 27,472	+ 36,002	+28,248
District 7B	23,931	25,601	25,937	27,123	27,562	— 2,006	— 1,522	— 1,961
District 7C	23,217	23,024	18,157	18,956	19,617	+ 5,060	+ 4,068	+ 3,407
District 8	486,491	486,689	334,970	365,254	432,830	+151,521	+121,435	+53,859
District 9	105,020	112,203	115,709	118,113	119,083	— 10,689	— 5,910	— 6,880
District 10	90,000	87,620	89,738	88,828	91,087	+ 262	— 1,208	— 3,467
Total PAW District 3	2,617,203	2,640,514	2,452,822	2,498,978	2,617,053	+164,381	+141,536	+23,461

* Represents average rates or sustained. † Latest period for which actual production of all individual fields is available, and therefore necessarily basis for comparison between individual field production and ability to produce in committee's report by fields.

TABLE 2

Summary of Ivy Committee Classification of Fields in District 3

State or District	Number of Producing Wells		NUMBER OF FIELDS									
			Total*		With Most Wells Producing at Capacity		Producing at Inefficient Rate		With Little Development; Given Tentative Rate		Where Rate Expected to Rise with Each New Well	
	Dec. 1, 1943	July 1, 1944	Dec. 1, 1943	July 1, 1944	Dec. 1 1943	July 1, 1944	Dec. 1, 1943	July 1, 1944	Dec. 1, 1943	July 1, 1944	Dec. 1, 1943	July 1, 1944
Alabama	0	6	0	1	0	0	0	0	0	0	0	1
Arkansas	2,961	3,122	33	38	15	17	0	0	0	2	1	4
Uncontrolled	2,426	2,508	14	14	14	14	0	0	0	0	0	0
Controlled	535	614	19	24	1	3	0	0	0	2	1	4
Louisiana	7,025	7,105	152	160	39	48	5	3	22	24	18	†22
North	4,105	4,047	37	40	22	23	1	1	9	7	2	†5
South	2,920	3,058	115	120	17	25	4	2	13	17	16	17
Mississippi	371	385	6	7	0	1	0	0	2	2	0	5
New Mexico	3,857	4,019	53	54	30	29	0	0	3	4	4	8
Northwestern	3,799	3,931	5	5	4	4	0	0	0	0	0	0
Southeastern	58	88	48	49	26	25	0	0	3	4	4	8
Texas	100,243	102,041	793	887	404	434	7	4	78	122	27	113
District 1	3,623	3,610	56	56	51	51	0	0	3	0	1	3
District 2	2,824	2,899	69	76	33	33	0	1	11	15	3	‡5
District 3	8,107	8,182	148	159	42	57	6	2	14	22	7	21
District 4	7,970	8,142	158	180	56	68	1	0	8	13	13	32
District 5	1,755	1,763	22	23	18	19	0	0	2	1	0	1
District 6	27,519	27,287	32	34	15	15	0	1	7	9	1	9
District 7-B	6,896	6,942	69	76	55	57	0	0	0	5	0	6
District 7-C	1,296	1,308	28	29	19	19	0	0	0	1	0	4
District 8	14,377	14,951	101	124	43	43	0	0	13	21	1	16
District 9	20,053	20,239	109	127	72	73	0	0	20	35	1	†15
District 10	5,623	5,718	1	2	0	0	0	0	0	0	0	1
Total PAW Dist. 3	114,457	116,672	1,037	1,137	488	529	12	7	105	154	50	153

* Some fields grouped together, in some cases as counties, particularly in District 7-B and 10 of Texas. In most cases each producing zone in field listed separately as individual pool. † Includes one field with most wells producing at capacity ‡ Includes one field that is producing at inefficient rate.

barrels being produced inefficiently, compared with 9225 barrels in December. Texas Gulf Coast is now producing 12,896 barrels more than recommended by the committee, whereas in December it was producing 6005 barrels less than maximum.

There are a number of fields in each region that are producing more oil than the Ivy committee thinks advisable, and there are others that are not producing as much as the committee thinks they could without damaging reservoir conditions. If all the fields now overproducing continue to do so at their present rate, which is unlikely because of natural declines in producing ability, and all other fields were increased to their estimated maximum efficient producing rate, District 3 could produce an additional 71,000 barrels per day. Therefore, when called upon to produce additional oil, it is likely that the region will produce more than the 23,461 additional barrels indicated by the differences between current production and the committee's estimate of producing ability. Of course, if the situation becomes serious enough, daily output of many fields could be boosted to levels above committee estimates of maximum efficient producing rates. However, the fact that many fields already are producing above what is considered to be their efficient rate, presages that rather sharp declines in producing abilty may occur in the future.

In most areas of the district there has been very little change since December in the committee determination of ability to produce, indicating that discoveries and new development just about balanced the normal decline to be expected in settled production. Texas, accounting for 79 percent of the producing capacity in the district, has been increased from 2,068,382 barrels December 1, to 2,084,637 barrels July 1, a gain of 15,255 barrels, or 65 percent of the District 3 increase, and June production, as shown in Table 1, is now within 53,584 barrels of the committee's estimate of maximum. In December, Texas had additional oil amounting to 192,162 barrels daily. The table also shows that District 4 of Southwest Texas received the greatest increase—7384 barrels—largely due to Seeligson field, while District 9 (North Texas) was raised 7183

■ CONTINUED ON PAGE 62

TABLE 3

Fields Whose Rated Producing Ability Changed More Than 250 Barrels Between December 1 and July 1

(Figures in barrels per day)

FIELD	July 1 Ability	Change From Dec.
Alabama:		
Gilbertown*	300	300
Arkansas:		
Smackover	10,900	—850
Urbana	600	—400
Haynesville, Pettit*	540	270
Magnolia	15,000	—1,000
Magnolia (Sandstone)*	300	300
Schuler, Jones	9,500	—500
Schuler, Reynolds	1,500	—300
Urbana, Crain	750	—350
North Louisiana:		
Caddo-Pine Island	5,500	—750
Catahoula Lake	300	—300
Cotton Valley	1,350	—650
Holly*	400	400
Holly Ridge*	1,600	700
Little Creek	1,750	—250
Lisbon	700	—700
Nebo-Hemphill	8,500	—500
Olla	8,500	—500
Rodessa	7,500	—1,100
Sugar Creek	950	—325
South Louisiana:		
Avery Island*	1,500	375
Bayou Couba*	600	250
Bayou Sale*	7,000	500
Bayou Black	2,600	—250
Bosco	2,700	—300
Bully Camp*	250	250
Cameron Meadows	1,300	—500
Cankton*	260	260
Charenton	2,600	—400
DeLarge	250	250
Delta Farms	6,100	2,600
Eola	9,000	1,000
Erath*	300	300
Garden Island Bay	3,500	—500
Gibson	6,000	400
Gibson, Northeast	4,500	1,300
Gillis-English Bayou	750	—450
Golden Meadow	8,000	—1,500
Grand Bay	7,000	—500
Gueydan*	4,600	1,100
Jeanerette	1,300	—400
Jennings	8,000	—1,000
Lake Verret, West	3,000	800
La Pice*	900	300
Neale	7,000	2,500
North Crowley	4,000	500
Paradis	10,000	—2,000
Port Barre	3,000	—500
Quarantine Bay	8,000	400
St. Gabriel	6,000	500
South Roanoke	480	480
Tepetate	2,000	—500
University	6,000	—1,500
Venice	9,500	—500
Ville Platte	10,500	—1,000
Vinton*	5,000	1,400
West Gueydan*	650	—350
White Lake, East*	3,000	800
Woodlawn	2,500	300
Mississippi:		
Cranfield	1,200	1,200
Eucutta*	1,000	950
Heidleberg*	1,800	1,800
Pickens-Sharpsburg	5,000	500
Tinsley	31,000	—500
New Mexico:		
Leonard*	1,200	350
Loco Hills	3,300	300
Square Lake*	3,500	500
Arrowhead*	5,500	1,100
Cooper	1,650	—450
East Maljamar*	650	250
Eunice	18,250	2,250
Langlie	2,100	—300
Monument	22,000	2,000
Penrose	1,250	—250
Rhodes*	750	350
Vacuum	13,000	2,650
Texas—District 1:		
Darst Creek	9,500	—500
Luling-Branyon	4,100	—700
Salt Flat	1,750	—450
Washburn Ranch*	1,100	575
Texas—District 2:		
Cordele	1,000	250
Greta	9,000	1,000
Harmon	350	—250
Maurbro	1,500	—500
McFaddin	5,750	250
Placedo	4,500	—400
Porter	900	500
Refugio, Old	350	—350
Slick, Wilcox*	2,500	1,800
West Ranch	20,000	—2,000
Texas—District 3:		
Barber's Hill	5,200	—800
Bay City, North	1,000	650
Beaumont, West*	1,700	—300
Boling	775	—325
Cotton Lake, South	750	—450
Dyersdale	2,000	300
Fairbanks	7,500	—500
Fannett*	4,500	—450
Fig Ridge*	6,000	2,400
Hamman	1,000	—400
Hardin	2,800	—700
Hull	4,100	—800
League City	3,000	700
Magnet-Withers	7,500	—1,500
Manvel, Miocene	2,500	—500
Markham	1,000	375
Markham, North (Carlson)*	400	320
Markham, North (Cornelius)*	4,000	500
Old Ocean	15,000	1,100
Red Fish Reef	1,500	—500
Seabreeze*	1,500	—400
Segno, Deep	2,750	—250
Smith Point*	360	360
Sour Lake	1,600	600
Stowell*	9,000	2,000
Sugarland	8,000	—500
Thompson, Shallow	750	—250
Texas—District 4:		
Agua Dulce	5,950	—1,050
Agua Dulce—Rivers*	500	500
Alta Mesa	1,000	300
Armstrong*	300	250
Baldwin	1,000	625
Canales*	320	320
Colorado	2,000	—1,000
Fitzsimmons	850	—300
Flour Bluff	2,000	—1,000
Flour Bluff, East	1,000	400
Kelsey	2,500	—1,000
Midway	3,300	300
Odem	2,200	—300
O'Hern	1,500	—300
Orange Grove	1,200	—300
Piedre Lumbre	2,500	—300
Plymouth	8,500	—2,000
Richard King	3,000	250
Ross	550	500
Saxet	3,700	—300
Saxet, Frio	3,250	—250
Seeligson*	17,050	3,325
Seeligson, Zone 13*	1,200	1,200
Seeligson, Zone 14*	3,600	3,600
Taft	3,000	1,000
Taranchuas	400	—400
Tom Graham	1,000	—300
White Point, East*	12,000	1,000
Willimar*	2,600	1,800
Yturria	270	—330
Texas—District 5:		
Sulphur Bluff	3,750	—275
Texas—District 6:		
Long Lake*	5,000	500
Manziel*	1,200	600
New Hope*	2,100	1,140
Quitman*	5,400	2,400
Rodessa	4,600	1,100
Texas—District 7-B:		
Noodle, Central	300	300
Wimberly	2,365	965
Reddin*	540	340
Texas—District 7-C:		
Barnhart*	2,500	500
Big Lake	4,100	—900
Texas—District 8:		
Abell	2,200	—2,200
Apco-Warner	2,000	—1,500
Cowden, North	35,000	—6,000
Cowden, South	4,000	—1,000
Eaves	1,000	350
Embar, Ellenburger	4,000	600
Estes	4,000	—500
Foster	24,560	4,560
Fullerton*	6,200	4,475
Goldsmith	25,000	—5,000
Harper	1,500	—1,000
Henderson	10,000	4,000
Hendrick	4,750	—550
Howard-Glasscock	13,200	—300
Johnson	4,400	—600
Jordan	7,500	—3,500
Kermit	2,500	—1,400
Keystone, Colby	4,000	600
Keystone, Ellenburger*	2,500	2,150
Keystone, Holt*	500	500
Keystone, Lime	1,000	—800
Mabee*	800	800
Sand Hills	1,200	—1,200
Sand Hills, McKnight*	1,000	1,000
Sand Hills, Tubb*	6,500	+1,000
Scarborough	1,000	—500
Taylor Link	1,280	—270
Waddell	3,500	—1,500
Ward, North	10,000	1,000
Ward, South	1,925	—275
Weiner	1,200	300
Westbrook*	1,300	700
Wheeler, Ellenburger*	880	530
Yates	50,000	5,000
Texas—District 9:		
Archer County	6,700	—300
Hull-Silk-Sikes	11,000	1,000
Luke*	350	350
Scotland	400	—300
Clay County	3,500	700
Joy, Miss. Lime	1,000	450
Ross	450	250
Wynn*	275	275
Dangle*	250	250
Walnut Bend, Winger*	2,600	1,600
East Bryson	1,600	2,050
Ellis	550	310
Bonita	640	580
Dodson*	850	409
Hildreth	2,000	1,440
Wichita County	9,000	—600
K. M. A.	20,000	1,000
Fargo	2,750	—550

* Subsequent completions expected to increase producing ability.

The tanker in drydock, shored to maintain designed keel alignment, and with external corrosive spots on the bow section ringed for spot welding and restoration to former thickness and strength. The bow section, as such, ends just beyond the break in the bulwark, the entire vessel between that point and the stern bulkhead being cargo-carrying tanks and, as such, exposed to salt-water corrosion when used for carrying ballast.

All photographs and data courtesy of Socony-Vacuum Oil Company.

Combating Tanker Corrosion

Replacement of entire cargo-carrying section of tankers permits undamaged bow and stern to be continued in service

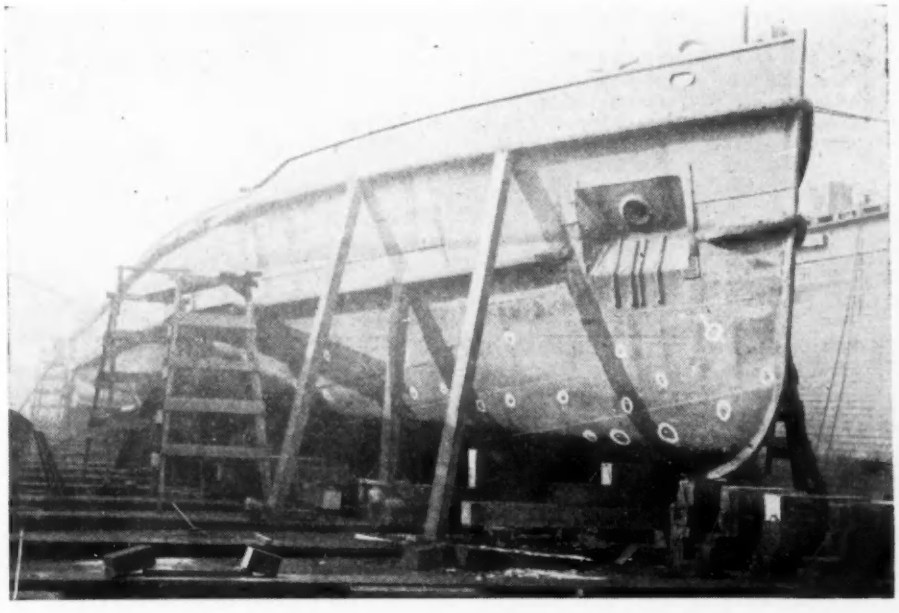
By ELTON STERRETT, Staff Writer

TO COMBAT those factors which result in eventually rendering unserviceable the cargo-carrying tanks of inland water and coastwise petroleum tankers, the marine transportation department of Socony-Vacuum Oil Company has worked out a most ingenious and highly effective method for circumventing corrosion in the cargo section. Apart from the usual careful drying of tanks at the end of each run in which they have been used for carrying salt water ballast, this to prevent contamination of oil products, no attempt is made to combat corrosion as it appears within the tanks. Instead, Socony-Vacuum cuts out the unserviceable sections and replaces them with new sections. With modern prefabrication shipbuilding methods, the tanker is out of service only a relatively short time.

Corrosion is the principal cause of deterioration of salt water vessels, requiring more outlay for protective measures than all other forms of wear and tear. In tankers, barges and other floating equipment where the normal loaded complement of petroleum products is replaced in part by sea water as ballast for the return trip, corrosive conditions are especially severe.

The outside of the vessel is given protection against the corrosive action of the water by carefully compounded and frequently applied paint coatings. However, the interior of the cargo carrying tanks, of which one side is usually formed from the ribs, skin and other structural members of the vessel at that point, is exposed directly to the corrosive action of the brine. This is due to the demand that the interior of the tank be clear of any protective substances which might inhibit electrolytic action and wastage of metal.

Where two or more analyses of steel are present, as where riveted joints are used, or where piping must pass through cargo tanks, electric couples are inevitably set up which require only the presence of an electrolyte for action to begin. If varying analyses of steel are not in the same tank, stresses in the



This coastwise tanker, ready to begin, anew, deliveries of petroleum products, shows externally no evidences of the major operation which has converted a ship no longer usable into one with several years more of operating life. Although the smooth contours belie it, the entire central or cargo-carrying portion of this ship is new, floated between and welded to the old bow and stern in an operation which removed all structural elements affected by corrosion set up by sea-water ballast.

The old vessel, shown above, has been cut apart, leaving the central section free to float as water is admitted to the drydock. The tank section, being lighter than bow and stern sections with their permanent installations of equipment, tends to float free of the supporting blocks while the ends remain stationary. As soon as buoyancy is observed in the central section, the dock is separated and clearance provided to permit the center to rise without chafing against the ends, and thus to float free.

structure of the vessel, or even in different areas of the same plate, may give sufficient potential to accelerate damage.

Insures Maximum Service

The Socony-Vacuum sectional replacement method equalizes the wastage from corrosion throughout the entire cargo-carrying or mid-section of these small tankers so as to insure that the maximum service life is obtained from all the steel represented in the tanks, and that no still usable tanks are discarded with those too far gone to be either tight or structurally adequate.

The tankers on which the method has been used are of the usual off-shore type, readily divisible into three sections: 1). the bow, carrying the anchors and windlass, storage lockers, fresh water tanks, and other accessories not directly connected with cargo carrying; 2). the mid-section, which carries the cargo, and which is divided along the keel into port and starboard tanks, extending from keel to deck plating, and provided with necessary piping, valves and hatches for handling liquid cargoes; 3). the after end of the vessel containing the propulsive machinery, steering gear, transfer pumps, other mechanical equipment and living quarters. To insure against the penetration of liquid cargo into either bow or stern sections, a double bulkhead or cofferdam is used at either end of the tank section.

These vessels are operated in normal traffic until examination shows that the tanks have corroded to the point where they are no longer serviceable, at which time the tanker is floated into a drydock, and literally cut apart at both bulkheads to separate the three component parts. A new center, or cargo-carrying section, is then inserted between the still serviceable bow and stern sections, the parts carefully aligned, and the new mid-section welded to the ends. This gives a vessel which is in every way as efficient as its predecessor.

All piping, carried on deck to be joined above the line of hull junction, is fitted to jig so that the simple bolting up of facing flanges readies the cargo handling lines for service.

Method of Rebuilding Ship

The motor vessel "Providence Socony", larger than the seven coastwise tankers preceding it in the com-

Below—Looking from end of dock section carrying the stern section, the new tank portion of the tanker may be seen, floating into position between the halves of the severed dock, with the old bow section readily visible between the towering sides of the dock in the distance. All tanks, piping, valves, trunks and hatches are located in this middle section before it is launched, leaving little more than actual joining of the parts to form a complete, seagoing vessel.

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The new tank section already aligned between the two old ends of the vessel, a tug maneuvers the two portions of the dock together, at which time the old bow will fit snugly against the forward end of the cargo-carrying replacement section, requiring only the welding operation to complete the work-over operation and fit the tanker for sea service again.

pany's rehabilitation program, required changes in the usual method of reworking, due to lack of derrick capacity sufficient to lift out the bow and replace it. The entire exchange of center sections was water-borne in the case of this tanker, the various parts being floated into alignment and the drydock then emptied of water to facilitate welding operations.

After the vessel was floated into the drydock, the dock was pumped dry, and the two cuts around the hull made to divide the ship into three parts. The drydock was then flooded, lowering the unit with the severed tanker into the water. This process was closely regulated to the point where the center section, being more buoyant than the bow and stern sections, floated free while the other two parts remained stationary on the shoring. The drydock, built in sections, was then opened or separated into two parts.

Old Section Out

When the dock was opened, it was possible to float out the old, corroded cargo section, leaving only the bow remaining in that portion of the dock, while the stern section occupied the end of the companion dock. The new central section, just completed and launched in a manner similar to barges or other complete vessels, was then maneuvered between the two separated halves of the dock, and aligned with the salvaged portions of the former vessel.

Halves Brought Together

It was necessary then only to bring the two halves of the dock together, align the three parts of the vessel, and pump out ballast from the dock sections until the entire assembly again rested on the prepared shoring blocks, ready for the drying of the dock and the welding of the two seams which would make a unit of the three matching parts.

When the new ecntral section is welded into such a tanker, she is in appearance no different from the vessel as originally launched, but has been provided with a new set of cargo tanks in an operation which is less expensive than the rebuilding of the corroded section in any other manner, and with less delay to actual delivery operations, due to prefabrication of the new central portion in the shipyard while the old tanker remains in service. Not until the new tank section is completed and launched, is it necessary to take the ship out of service, and then only for the relatively short time required for docking, cutting apart and welding again.

April Production Figure Nearly Hits All-Time High

Domestic crude production in April averaged 4,453,000 barrels daily, almost reaching the all-time record established last November and a gain of 42,000 barrels over March, it was reported by the Bureau of Mines.

At the same time, the bureau disclosed, daily average demand for domestic crude declined 11,600 barrels from the record March level, to 4,549,400 barrels, but net withdrawals from domestic crude stocks of 96,300 barrels daily were needed to bring supply and demand into balance.

The most cheering note in the situation shown by the bureau was the disclosure that in the first four months of this year the total initial production of new wells was almost double the comparable 1943 figure. Completions number 953 in April, a decline of 103 from March but 25 percent above a year previous.

Crude runs to stills were 4,411,000 barrels daily during the month, a decline of 37,000 barrels from March, but a further gain in gasoline yield from 38.5 to 39.1 percent kept the motor-fuel output average practically constant, and there was a gain of 1,363,000 barrels in stocks of finished gasoline during the month, the April 30 total of 76,638,000 barrels being only 2,015,000 barrels less than on the same date in 1943.

The bureau's supply-and-demand report showed that total production of crude in April was 133,593,000 barrels against 136,752,000 barrels in March, while natural gasoline and benzol production was 8,028,000 barrels against 8,250,000 barrels, making a total production of 141,621,000 barrels against 145,002,000 barrels, or a daily average of 4,721,000 barrels against 4,677,000 barrels.

Stocks at the close of the month included 234,694,000 barrels of gasoline-bearing crude against 236,220,000 barrels March 31; 6,473,000 barrels of heavy crude in California against 6,766,000 barrels; 4,213,000 barrels of natural gasoline against 4,242,000 barrels, and 226,678,000 barrels of refined products against 225,134,000, a total of 472,058,000 barrels, all oils, against 472,362,000 barrels.

The price index for petroleum and products, as reported by the Bureau of Labor Statistics, was 42 in April, unchanged from March, comparing with 62 in the same month last year. The crude capacity represented in the report was 4,867,077 barrels, indicating an operating ratio of almost 91 percent, compared with 81 percent in April, 1943.

Oklahoma May Production Highest Since April 1943

Oklahoma produced 337,124 barrels of oil daily during May, the highest rate of flow since April last year when the state produced 341,782 barrels daily, according to a report of the Oklahoma State Conservation Commission. This increase for May was noted notwithstanding a decrease in the West Edmond pool allowable from 300 to 200 barrels per day per well. The state's allowable for May was 328,000 barrels daily, and the June-July allocation is 332,000 barrels daily.

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Proud of Accomplishments—

Russian Production And Refining Expands

New fields being opened and big refineries are started by petroleum industry combines

By DON L. CARROLL, Staff Writer

ACCORDING to information released by the United States State and Commerce departments, newspapers in Russia are proudly publicizing recent accomplishments in the exploration, development and utilization of the petroleum resources of the Soviet Union.

There is no legitimate reason to doubt that the over-all picture of the Russian petroleum industry today is one of marked progress, with each producing Soviet Republic accounting for some noteworthy improvement.

In Azerbaidzhan, a Trans-Caucasian republic, wherein is located the famous Baku oil center, production is considerably above prewar levels, and the Azerbaidzhan Oil Refineries Trust has consistently exceeded its quotas of refined products for each month since the summer of 1943. Output of aviation gasoline at the plants belonging to the company has tripled in the last 2 years. Crude oil production in the Baku region is approximately 50 times what it was in the days of the Czarist regime, many new fields having been opened there in the meantime.

It seems likely that the Baku area may be entering a new phase of development as a result of detailed geological and geophysical work now nearing completion, combined with test drilling to confirm scientific work. The Azerbaidzhan Oil Combine, one of eight combines controlling the activities of the 24 separate oil-producing trusts operatnig in Russia, has all but completed the submarine mapping of promising structures beneath the waters of the Caspian Sea, in a line paralleling the coast and running northeast and south of Artem Island.

Russian geologists believe that the entire area off the south shore of the Apsheron peninsula will be found productive, and that chances are equally good for the discovery of more offshore fields along a line running from Putinsk Bay up to Shikova Kosa, as well as in the locality south of Peschany Island and the area offshore from the Bibi-Eibat district. Intensive test drilling of one of these offshore trends led to the recent discovery of the important Kala field, which is now known to be a deposit of the stratigraphic wedge-out type. A similar occurrence exists at Chakjnaglyar, where the first stratigraphic trap discovery of Baku was made. Fields at Kalinsk, Buzovny, and in the Yasaman Valley also are stratigraphic trap accumulations.

A new oil field was opened in February in the Bashkir Republic, proving a large structure on the west flank of the Ural Mountains. Five producing wells had been completed in the field by the end of April, and it is reported the rest of the field is being developed rapidly. The first three wells in the field were brought in at more than 1000 barrels each per day, according to the Russian press.

In Kazakhstan, the Dossor field is steadily increasing its output, and excellent new fields have been discovered nearby—one a few miles north of Dossor and the other at Paskuduk. For the district as a whole a production gain of 7062 barrels was registered in one month last fall. The Sagiz field is now the leading producing area in the district, followed by the Dossor, Makat and Komsomolsk fields, in that order.

New pools discovered in 1942 in the vicinity of Bashkiria are being publicized by the Soviets as a second Baku area. The evident production potential of the area inspired construction of the great Ufa refinery there. This plant was reported to be lagging behind quota assignments during the first half of 1943, but was exceeding them before the end of September. Official figures regarding accomplishments of the Ishimbaevo Oil Trust, in charge of oil field development at Bashkiria, credit the combine with fulfillment in 1943 of 108 percent of its quota of crude oil production and 104.7 percent of its drilling schedule.

A major field was discovered last summer in the Kinzebulatovsk area, but details as to its development are lacking, although a number of wells were scheduled to have been completed in the field by the end of November last.

In the Kuibyshev province all oil fields are claimed to have more than fulfilled quotas for 1943, and their combined daily average output is said to be approaching a figure three times as great as that of 1938, the last prewar year.

Considerable drilling activity apparently took place last year in the Kim oil field, of Tadzhikistan, since production there was reported to have quadrupled during the last quarter of 1943. In the distant Asiatic province of Kirgizia a second producing well is now in operation in the Changyr-Tash field; and the deputy of the Tatar Republic recently reported to the Supreme Soviet in Moscow that a rich oil field has been under development in the Shugarov sub-province since the beginning of the current year. According to this spokesman, engineers estimate the ultimate daily potential of the field at more than 135,000 barrels.

Refining Industry Expanded

In Fergana province, the Vannovskaya refinery was enlarged in 1943, and is operating at a 40,000-barrels daily capacity. Ozokerite also is mined in the Fergana region, and a newly-constructed plant is handling large tonnages of this material. At Kim, in Tadzhikistan, another Ozokerite mine is in full scale operation, and was credited with being 1500 tons ahead of schedule for 1943 output.

Probably the most interesting of Russia's wartime refinery projects is completion of the plant at Ust Ukhta, near the Arctic Circle in the Komi Republic. The refinery, completed in March this year, in advance of the development of oil fields in the Petchora basin, has a designed capacity of 40,000,000 barrels per year. Its construction was inspired and accomplished solely on the basis of the expectation of adequate production from fields yet to be developed in the region lying to the east of the Timan hills. It has been authoritatively reported that detailed geological, geophysical and drilling explorations that have been in progress in the Petchora basin for several years have almost certainly confirmed the presence of oil in prolific quantities at comparatively shallow depths.

Further evidence of the confidence of the Russians in the possibilities of the region is demonstrated by the fact that more than 1000 miles of railroad line have been put through to the refining center, as an extension of the old Leningrad-Vologda railroad. Excellent coal beds also occur in the Petchora basin, and, by this time, both petroleum and coal likely are being produced there to meet the growing demand for fuels on the war and production fronts of the nation.

The fact that a number of Russian petroleum industry combines have been cited by Premier Stalin for greatly exceeding schedules of drilling, production and refining during the past 18 months indicates that the industry is definitely, and probably rapidly, expanding. According to Russian economic authorities the official production of the entire Soviet Union in 1941 was 268,600,000 barrels, which is only slightly higher than best American estimates. Considering more recent and current developments, the output for 1944 may well be in excess of 300,000,000 barrels.

Petroleum Institute of South America Organized

A recent conference of oil industry leaders, held at Montevideo, endorsed proposals for further development of oil fields in South America. It is planned to merge the Argentine Petroleum Institute with all other groups interested in promoting research on new oil areas within the continent, and to establish branches of the institute in Brazil, Colombia and Venezuela. An invitation has been extended to representatives of Mexican and American oil interests to become active members of the research and promotional organization.

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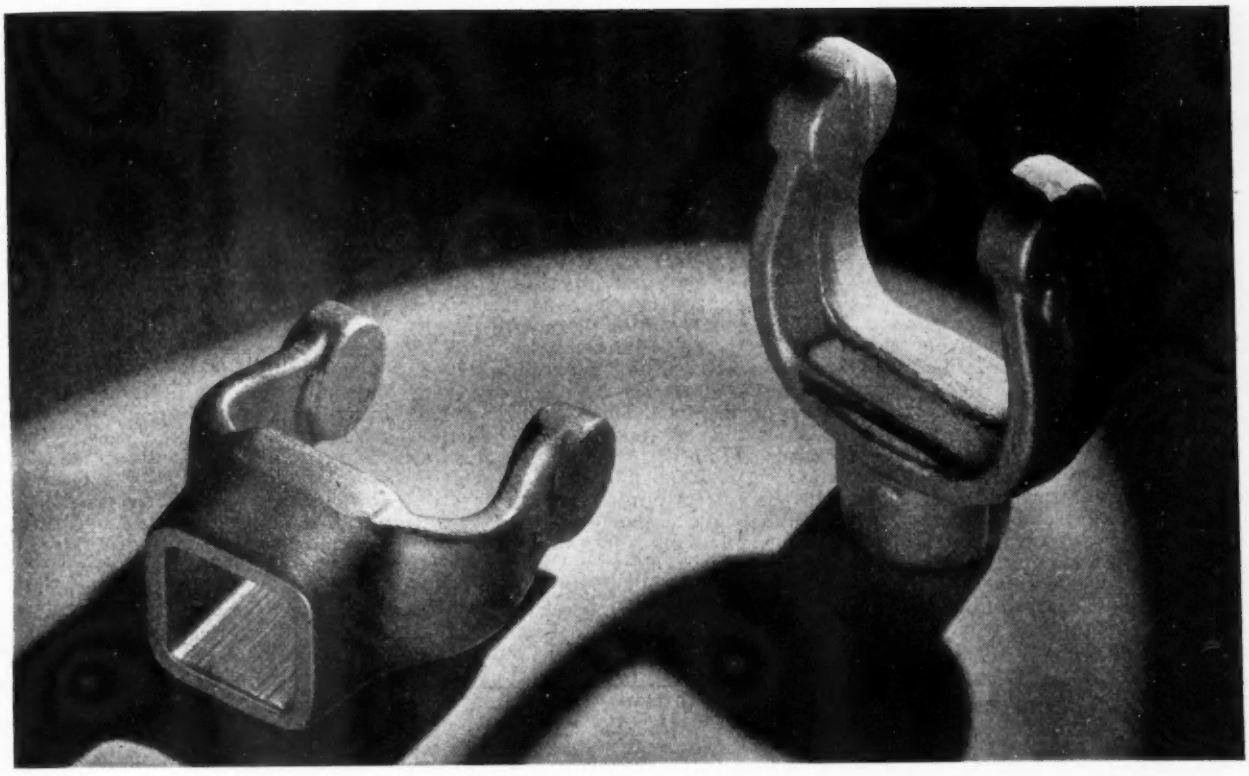

The Universal Yoke Forging illustrated on the right was redesigned, as shown on the left. Five expensive machining setups were eliminated and the part put in service after just a simple drilling operation. Careful engineering of the forging provided coined surfaces at six points, thereby eliminating three milling operations. A straight square hole is pierced in the forging, instead of the drilling and broaching operations previously performed. • Just another good example of labor and money saved by INTERSTATE Engineered Forgings.

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Geologic Use of Drilling-Time Data

By G. FREDERICK SHEPHERD and GORDON I. ATWATER

PART 2

WHILE the chief advantage of time drilling to the geologist is the availability of subsurface control of a well while it is being drilled, geologists now are finding drilling time data of value for many other uses. Correlation of drilling time logs with electrical logs, the use of drilling time to check the course of directionally drilled holes, and application of drilling time to coring were some of the applications discussed in Part 1 (THE OIL WEEKLY, July 3, 1944) of this paper. This installment continues the discussion of additional applications for drilling time data.

Working Out Completion Program

The detailed information obtainable in saturated sand sections from time logging was pointed out in Part 1. Such detailed information on a saturated cored section aids in working out the completion program of a well. The position and thickness of all impervious beds as well as saturated points makes possible correct recommendations for squeezing and production tests.

Figure 9 is a similar combination of drilling-time log, electrical log and lithologic column of the same sand section of another well in University field where the entire section was cored and only 42 percent recovery was obtained from the cores. In sections of this kind where rapid changes in lithology from porous sandstones to dense calcareous sands and tight, slightly sandy limestones occur, the interpretation of the complete geologic column would be impossible without the aid of drilling-time data. Location and thickness of the sand streaks, which are permeable enough to produce, are shown and from combined use of all information available, the net sand thickness is shown to be 40 feet but an exaggerated figure might be obtained if the electrical log only had been used. Where a gas-oil contact occurs, it might be desirable to take advantage of the dense streaks in perforating the well to avoid a high gas-oil ratio and in other sands where an oil-water contact occurs, the presence of impermeable streaks likewise aids in the completion program in shutting off water.

Prior to the use of time drilling, it had been our routine procedure to take side wall cores of any resistivity kicks on an electrical log regardless of our interpretation of the bed as being sandstone or limestone. This was to safeguard against missing any saturated section because of an error in interpretation of the electrical log. Even borderline cases may be correctly interpreted from drilling-time data, eliminating the time and expense of taking side wall cores except in sands. Figure 10 shows the electrical and drilling time logs of a section of sand interbedded with limestone and the arrows indicate where sidewall cores were taken. No recovery was had on the top two cores as would be expected from the hardness indicated by the drilling time. Resistivity zones not cored because of the interpretation of time-drilling data are marked on the electrical log. The correlation of the sands and hard streaks is quite apparent between these two logs, including streaks of low permeability indicated only on the drilling time log, as at 8010 feet.

Determination of Sample Lag

On wells where sample logs are kept the log may be made more accurate by determining the amount of lag between time of penetration and time of sample collection. The time required to circulate samples from bottom may be determined by introducing a suitable marker into the flow line at intervals of approximately 2500 feet. Half the time required for the reappearance of the marker is the time lag between penetration and sample collection. Reference to drilling-time records, such as illustrated in Figure 11, will give the correct depth at which collected samples were drilled, greatly facilitating the proper logging of samples in reference to electrical and drilling-time curves. On the chart, time and depth where a connection was made and samples collected is shown at 11:50 o'clock. If, at this depth, the time lag is 1½ hours, the samples actually left bottom at 10:20 and at a depth 25 feet shallower than the depth recorded when

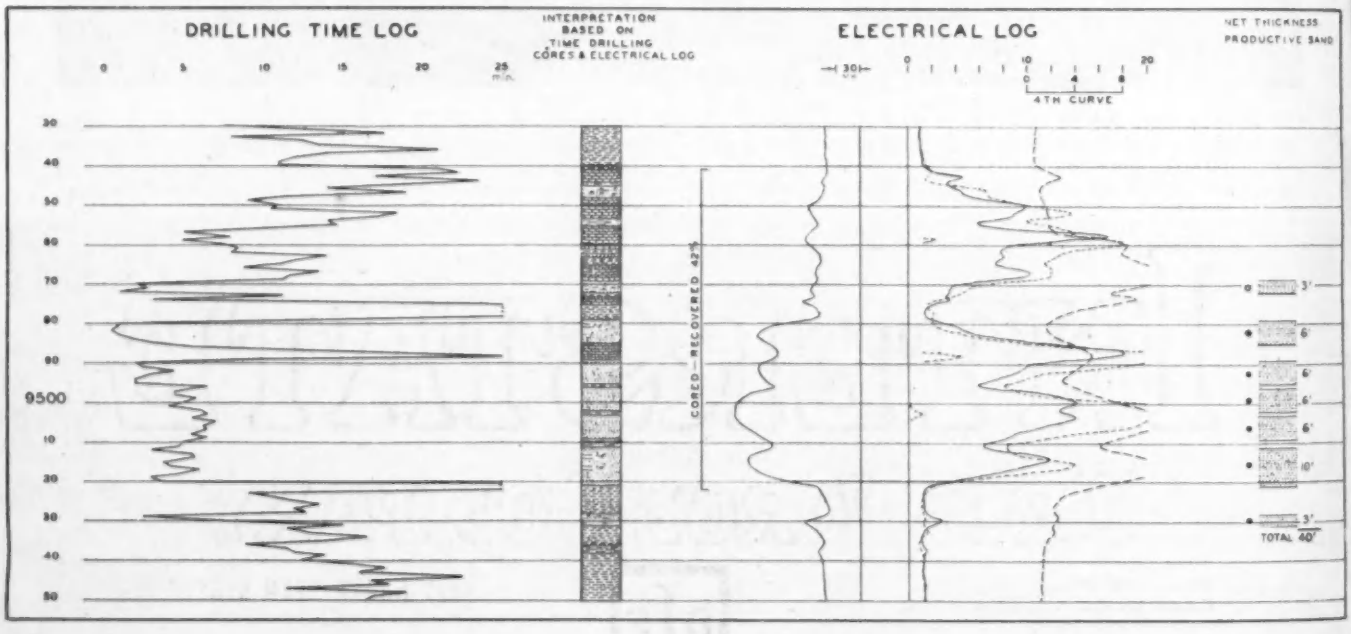


FIGURE 9
Time Drilling Applied to Coring

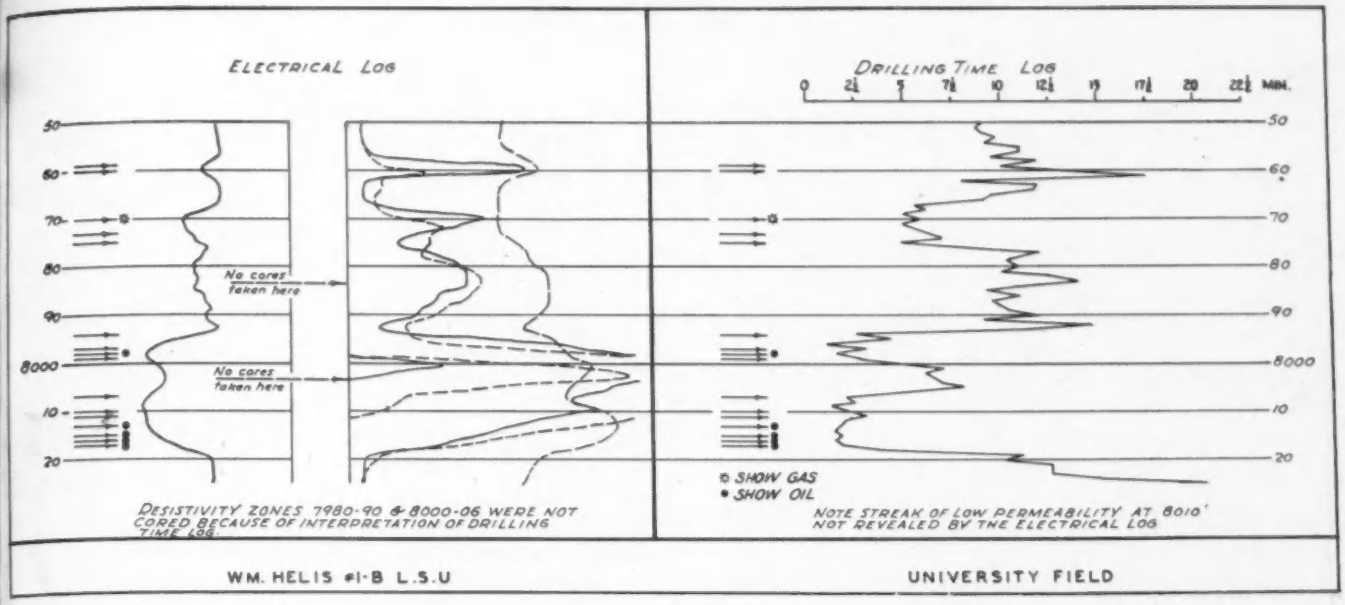


FIGURE 10
Side Wall Coring Points Selected with Aid of Drilling Time.

the samples were collected. Thus the sand break from 11:00 to 11:15 will not be included in the samples caught at 11:50. The value of knowing the amount of sample lag is brought out in such areas as Mississippi where several formation tops are picked on lithologic criteria not always recognizable on electrical logs.

Drilling-Time Data in Fishing

While drilling 1-B L.S.U., University field, the drill pipe twisted off at a depth of 9899 feet, leaving about 1000 feet of pipe in the hole. Extraordinary difficulty was encountered in recovering the last 400 feet of fish which was in a section not yet electrically surveyed. Hard limestone and cemented sand beds formed ledges overhanging washed out shales, under which the top of the fish rested. In attempting to underream the hole to get over the fish with a cutting tool it was desirable to know where the hard ledges and washed out shales occurred. From the drilling time data the geologists were able to give the driller a complete log of this part of the well's lithology showing the depths and thicknesses of the formations. Figure 12 shows the geologic column on the left made from drilling time data and on the right the column prepared by interpretation of the electrical log run after the fish was recovered.

In several University field wells a cavity was encountered in the Heterostegina lime, and it was desired to set a string of protection casing in a certain shale break 10 feet thick occurring above the cavity. In each instance this casing point was picked from the drilling-time curve, avoiding the necessity of running one or more electrical logs higher in the section for correlation. First use of this kind is illustrated in Figure 13, incidentally on the first well of which drilling-time data were kept by the authors. The log with which it was necessary to correlate was a two curve log made in 1935 and on a scale of 1 inch equals 100 feet. Regardless of the handicap of using this log and the lack of experience with drilling time, the shale break was picked and casing set at the desired point. The comparison of the drilling-time log used to pick the casing point with the electrical log run after the casing point was reached by the bit shows the shale break and casing point.

Measurement Problems

Another important use of drilling-time curves is in connection with well measurement problems. Inasmuch as a fixed record of each connection is made on the drilling time charts, a correct tally of pipe is available approximately every 30 feet. This has been of use in checking measurement discrepancies between different runs of electrical logs and between driller's and logger's depths. By identifying formation breaks

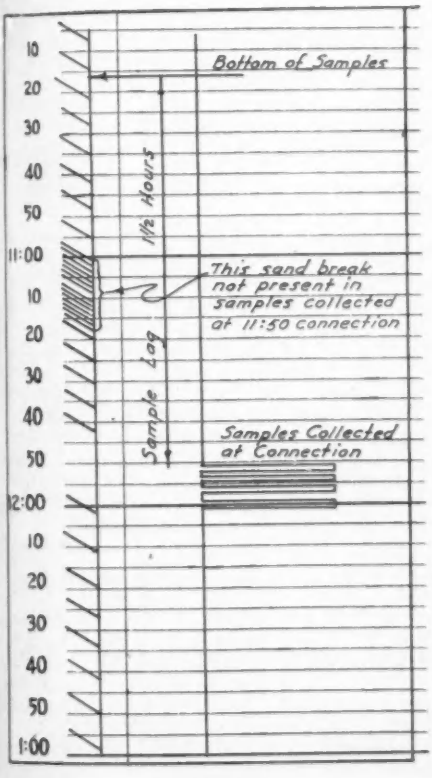


FIGURE 11
Use of Drilling Time Record for Sample Lag Determination.

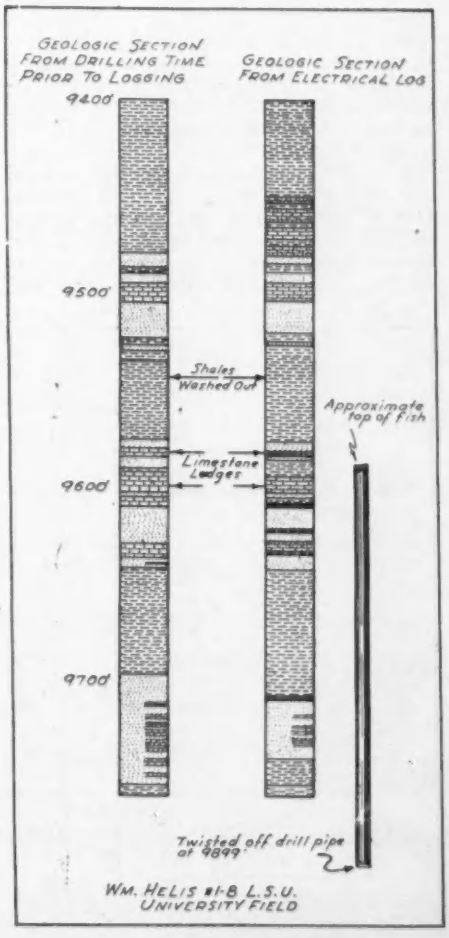


FIGURE 12
Drilling Time Data Aid in Fishing Stuck Pipe by Locating Limestone Ledges and Washed Out Shales.

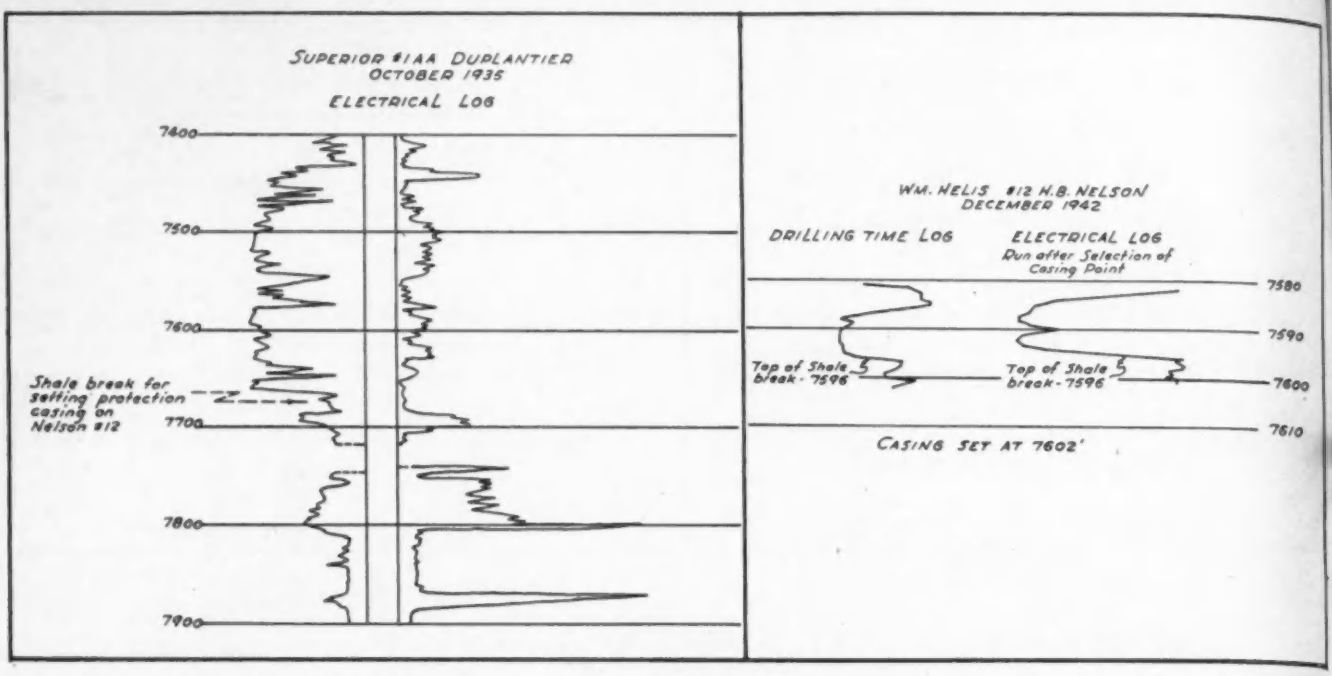


FIGURE 13
Use of Drilling Time to Pick Casing Point.

near the bottom of a given run and comparing the interval between it and total depth it will be apparent whether the electrode reached the bottom of the hole or whether cavings or mud conditions prevented its getting to bottom. This eliminates one source of error in measurement discrepancies between driller's and logger's depths. In the event a gamma-ray log is run behind casing for measurement purposes, the drilling-time curve helps identify breaks and check measurements in several ways. In Figure 14 the driller's depth is shown at 6298 feet and total depth on the log is 6292 feet, an apparent discrepancy of 6 feet. The top and bottom of the sand on both drilling time and electrical logs check at 6190 feet and 6279 feet. Inasmuch as 19 feet of hole were actually drilled below the sand and the electrical log shows only 13 feet the 6-foot discrepancy is wiped out by evidence of cavings in the hole.

Hypothetical Electric Log Construction

The geologist has to rely at times on a minimum of data because of unusual circumstances. If a hole is lost before an electrical log is run, he has little to use except the driller's log, of questionable value, and samples, if they have been saved. A drilling-time log will prevent the complete loss of the record of a well's lithology and, in addition, the geologist can actually reconstruct, by his interpretation of the data, the appearance of the lithology by drawing an hypothetical electrical log. In Figure 15 is such a reconstructed electrical log where the Heterostegina lime cavity section was not surveyed because of unusual well conditions. Instead of omitting the portion not logged, the log was completed from drilling-time data, and at the right is an electrical log of another well through this section where the cavity could be surveyed.

Figure 16 is another such hypothetical electric log construction from drilling-time data in a well where casing was set to protect sands encountered above a section of heaving shale. After drilling a slim hole below casing, no sand was encountered in the drilling, and because of the well hazard no electrical survey was made. The log was completed, however, from interpretation of drilling-time data.

A similar case is shown in Figure 17 where casing was set to protect a sand above a section of heaving shale. The upper sand contained a water contact and below the sand a 40-foot shale was encountered. The drilling-time log indicated presence of a new sand 12 feet thick below the shale, but because of the condition of the well an electrical log was not run. A liner was set and the sand tested on the basis of drilling-time data. Not only was the presence of sand known from drilling time, but also the correct depth for testing.

On a flank well in Port Barre field, the first electrical log was run at 6739 feet on the well at the right of the cross section in Figure 18. While supervising the geology on this well a log was drawn on this cross section prior to running the next electrical survey to show how the section might appear after it was logged. This illustration is a reproduction of the original log construction made in the field and the short section along side of the original is added to compare the actual electrical log of the same well with the hypo-

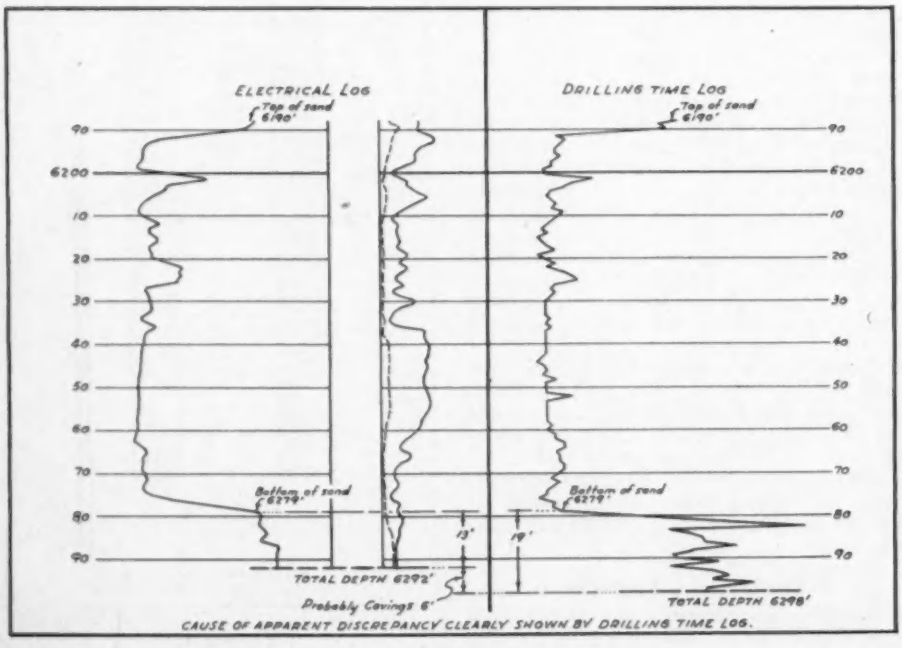
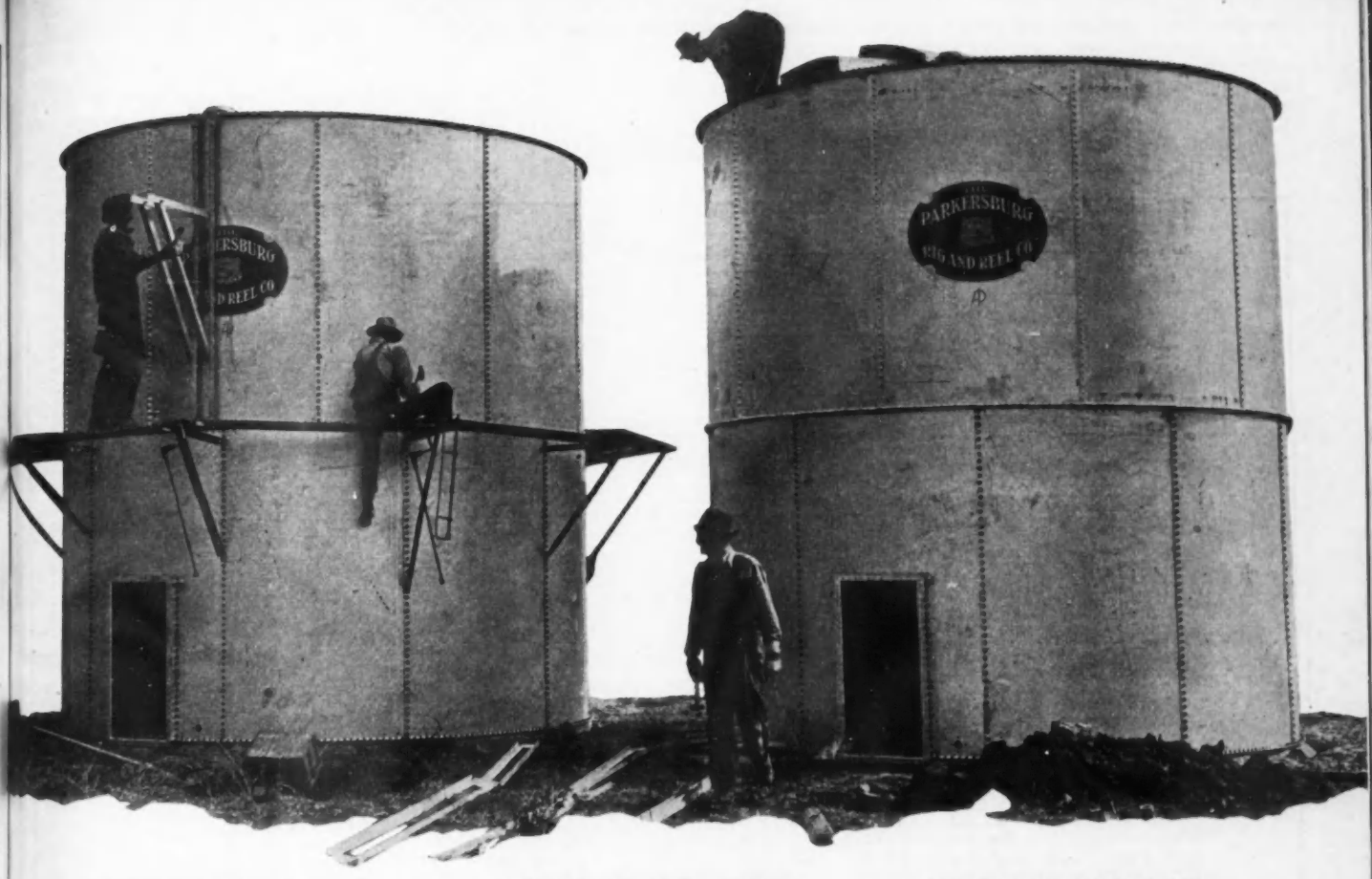


FIGURE 14
Drilling Time Used in Checking Total Depth Measurements.



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thetical log construction. Figure 19 shows in detail these two logs, using enlargements of the original copy, and in addition the drilling-time log from which the interpretation was made. This indicates the liberty that was taken in interpreting this section, using sample examination and knowledge of data on other wells to make up the hypothetical log.

In summarizing the direct uses of drilling-time data to the geologist it should be stated that this is but one more technique available and can best be used in conjunction with tools already at his disposal. In all the drilling-time logs made, over the wide range geographically and stratigraphically, the records have given faithful logs adequate for geologic interpretation. Drilling-time curves are thus supplementary to sam-

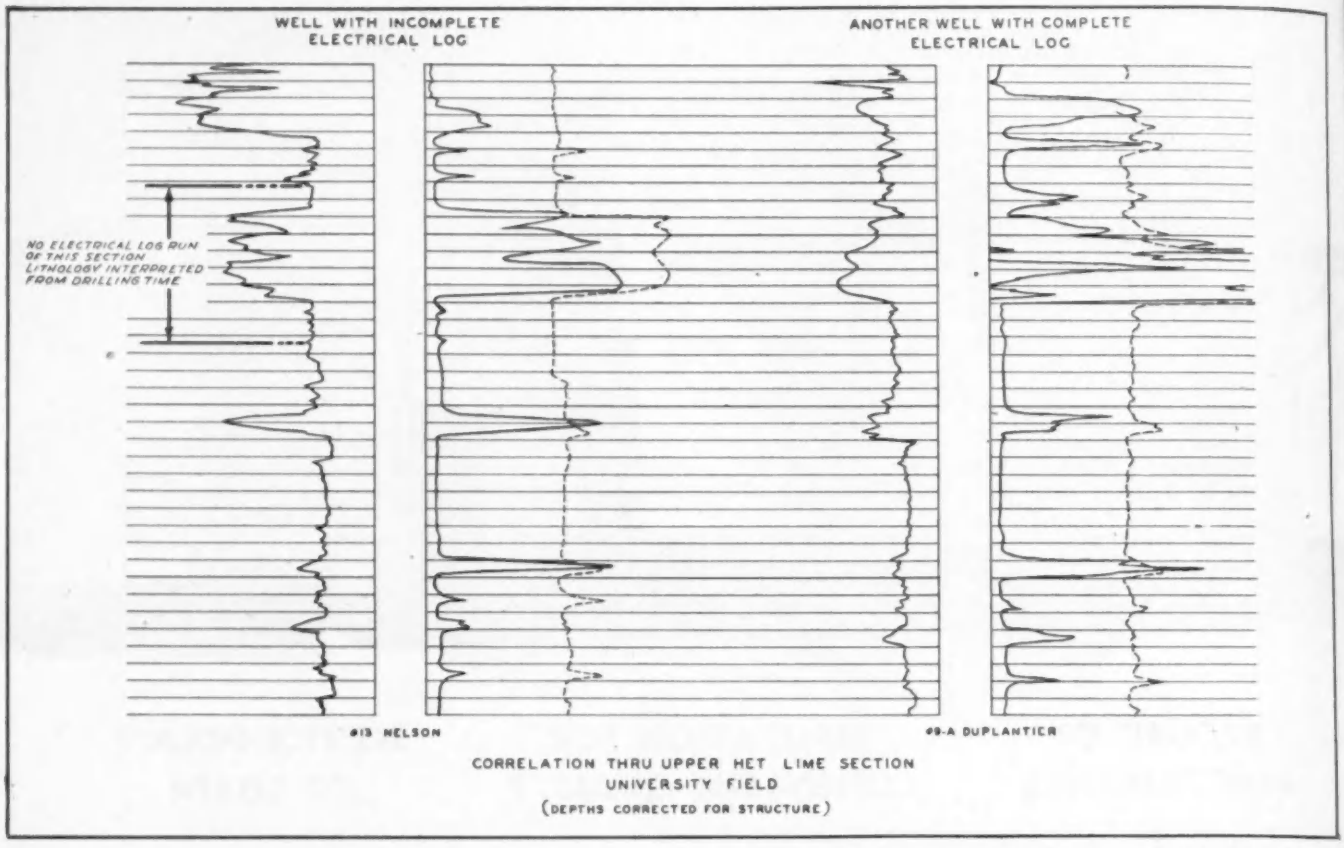

WELL WITH INCOMPLETE ELECTRICAL LOG
ANOTHER WELL WITH COMPLETE ELECTRICAL LOG
NO ELECTRICAL LOG RUN OF THIS SECTION LITHOLOGY INTERPRETED FROM DRILLING TIME
#13 NELSON
#9-A DUPLANTIER
CORRELATION THRU UPPER HET LIME SECTION
UNIVERSITY FIELD
(DEPTHS CORRECTED FOR STRUCTURE)

FIGURE 15

Figures showing Hypothetical Electrical Log Construction from Drilling Time Data.

FIGURE 16

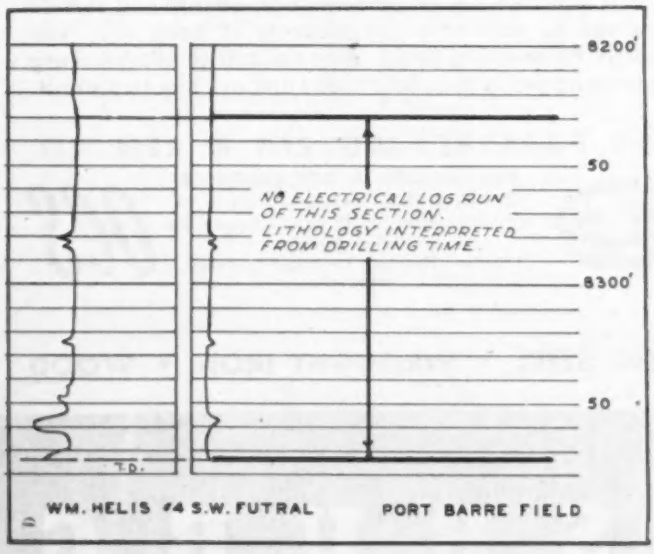
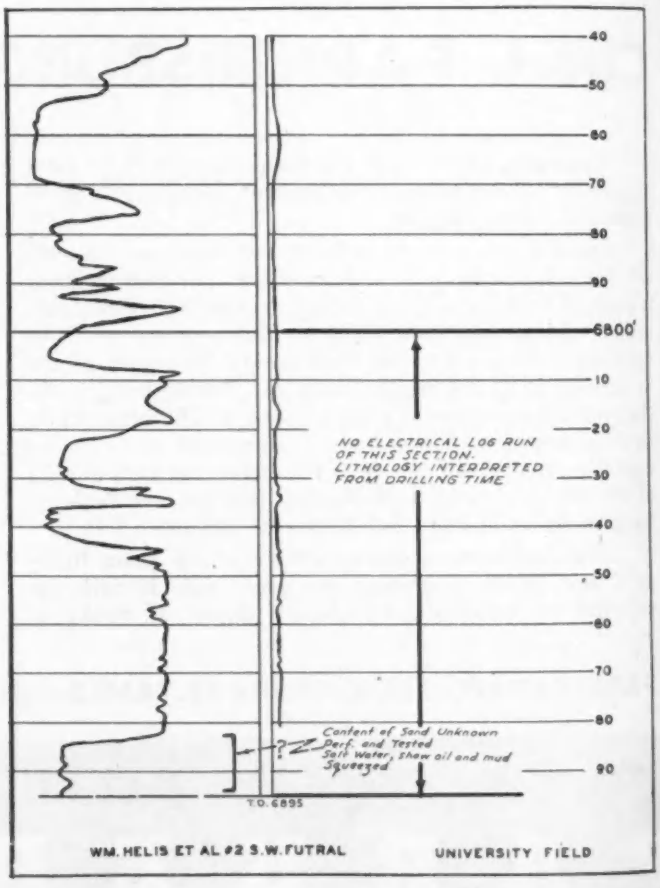


FIGURE 17 (Right)



Data on Properties and Working of Free-Machining "KR" Monel

A strong, corrosion-resistant alloy suitable for machining parts which may be hardened by thermal treatment

The new INCO Nickel Alloy, "KR" Monel,* possesses the same combination of properties as "K" Monel.* Equally rustless and resistant to corrosion, it can be hardened by the same treatment to obtain the range of strength, ductility and hardness shown in table below. Like "K" Monel, this alloy is also non-magnetic. However, its machining characteristics are much superior to those of "K" Monel.

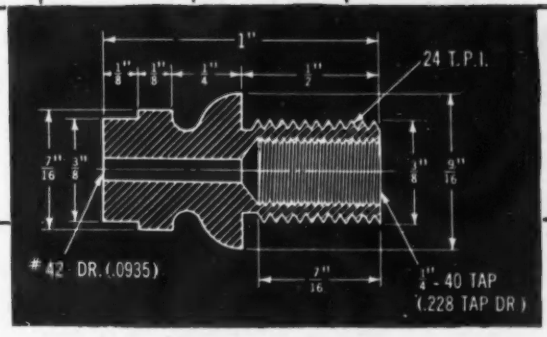
Machining data appear in the sketch and work sheet of operations on a practical job. For more detailed instructions, send for the new, revised edition of Bulletin T-12, "Machining Monel, Nickel and Inconel." Address:

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street New York 5, N. Y.

TABLE OF OPERATIONS

Operation	Rev. Per Min.		Surface Ft. Per Min.	Feed Inches	Remarks
	Spindle	Attachment			
Form	560	....	82	.00025	.....
Box Tool	560	....	82	.003	.....
No. 1 Drill	890	....	54	.002	L.H. Drill
No. 42 Drill	890	1600	60	.0015	L.H. Drill Drilling Attachment
Thread	560	308	25	.0416	Threading Attachment
Tap	560	183	25	.025	Tapping Attachment
Cut Off	560	....	82	.0002	.....

Material—9/16" dia. cold-drawn as drawn (not age hardened) "KR" Monel
Machine—No. 2 B & S Automatic Screw Machine
Forward speed of spindle—560 r.p.m.
Backward speed of spindle—890 r.p.m.
Tool—high speed steel (18-4-1 Type)
Cutting lubricant—sulfurized oil



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MECHANICAL PROPERTIES OF "KR" MONEL

Condition	Tensile Strength 1000 psi	Yield Strength (0.2% Offset) 1000 psi	Elongation in 2 in. per cent	Brinell Hardness 3000 kg.
Rod and Bar				
As Hot-rolled	90-120	30-60	45-35	140-190
Heat treated	130-150	90-110	30-20	230-260
As Cold-drawn	100-135	70-100	35-13	175-260
Heat treated	140-170	100-130	30-15	265-320

INCO NICKEL ALLOYS

MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL • "Z" NICKEL • NICKEL
Sheet...Strip...Rod...Tubing...Wire...Castings

ple examination, electrical logs, and gamma-ray logs, all serving as aids in the interpretation of subsurface geology.

Limitation in Use

The best of time logs is not the all-out answer to the problems of the geologist. Use of time drilling has certain limitations because of drilling characteristics of formations encountered. In general, the drilling-time curve provides no diagnostic log adequate for correlation in shallow parts of the hole where drilling is done with a fish tail bit. In each new area, it has been our practice to start the log under the surface pipe, and then to note at what depth the curve takes on diagnostic characteristics. On subsequent wells in the same field, then, the log is started at the critical depth as determined on the first well. For example, in University field, this depth is at approximately 5500 feet and in flank tests on piercement salt domes the curve becomes of use at around 3800 feet. In Liberty County, Texas, the drilling-time log takes on character at the top of the Anahuac section at approximately 5800 feet.

Abrupt changes in drilling conditions may produce a misleading drilling-time log, particularly when these changes occur coincidentally with changes in lithology. Such limitations, however, generally extend over a short vertical distance and experience and familiarity with the field will aid in recognizing uncharacteristic curves.

Solis Rules Asked; Test Set for Furhman Field

Sun Oil Company has requested special operating rules for wells producing from the Solis sand in the Garcia Field, Starr County, Texas. At a Railroad Commission hearing, evidence was presented showing the new sand, topped at 3574, is 106 feet lower than the old Garcia Sand. Sun has unitized numerous small tracts in the area into 40-acre units, and asked that the allowable be fixed on 100 percent acreage.

The Commission has issued an order requiring new potential tests on all wells in the Furhman Field, Andrews County. Tests to be made between September 1, and November 1, 1944.

Lucey Buys Company

Lucey Petroleum Company has acquired control and active management of Texas Conservative Oil Company, Corpus Christi, Texas. There will be no change in the local office and field management. Directors and officers include: J. F. Lucey, president; Joe Dranguet, vice president; H. L. Bromberg and James Young, directors, and Pryor Tunstall, treasurer, assistant secretary and director.

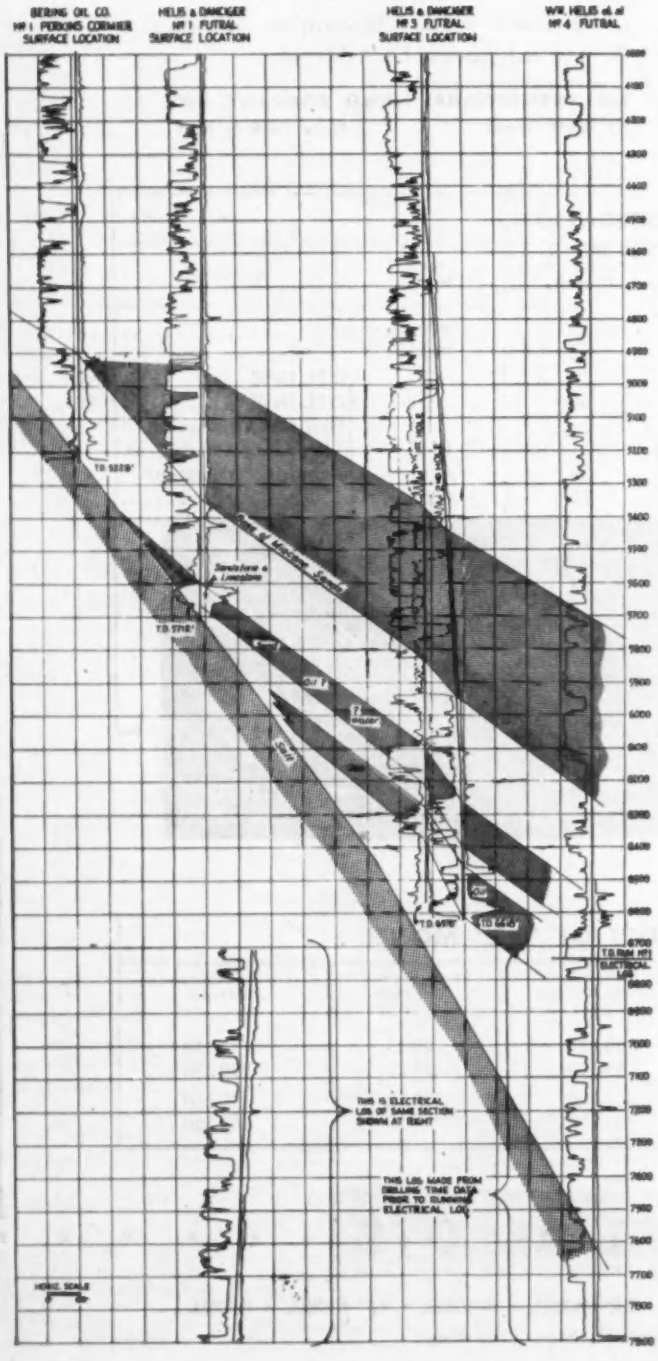
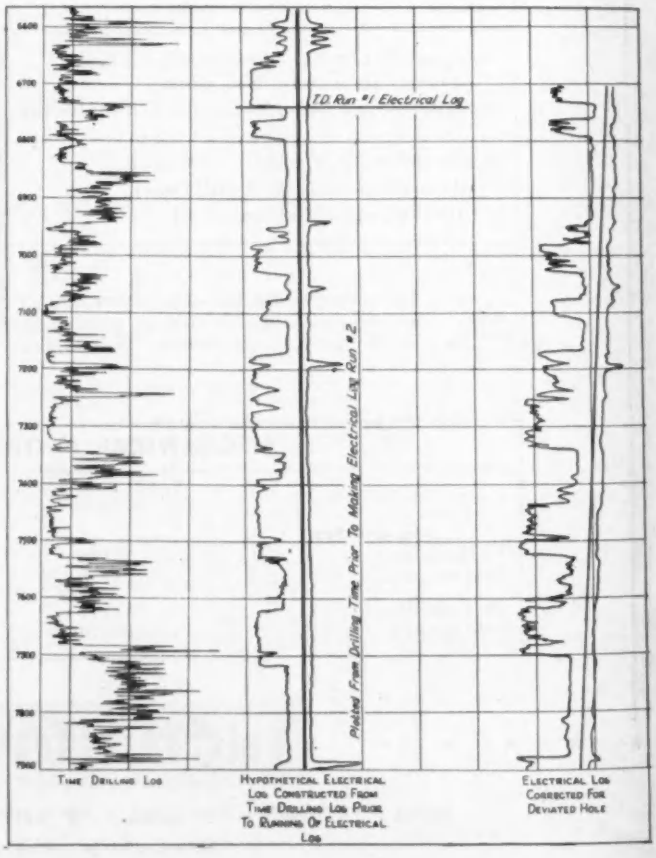


FIGURE 18 (Left)
Electrical Log Interpretation from Drilling Time.

FIGURE 19 (Below)
Use of Hypothetical Log Construction on Geological Cross Section Prior to Running of Electrical Survey. (Enlargement from preceding figure.)


T.D. Run #1 Electrical Log
Plotted From Drilling Time Prior To Making Electrical Log Run #2
TIME DRILLING LOG
HYPOTHETICAL ELECTRICAL LOG CONSTRUCTED FROM TIME DRILLING LOG PRIOR TO RUNNING OF ELECTRICAL LOG
ELECTRICAL LOG CORRECTED FOR DEVIATED HOLE

No induction lag

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• • • Secondary Recovery • • •

Careful Reservoir Analysis Essential

Source of energy needed to move oil from sand should be conserved from very first; oil production primarily reservoir and not a well problem with maximum recovery not high present potential the aim

INVESTIGATION of any oil pool's secondary-recovery potentialities, design of system and control of operation of any project are primarily based on physical aspects of the reservoir and its contents. In secondary recovery such a procedure is dictated as necessity, however the shrewd operator whose production is in the flowing and pumping stage has for the past

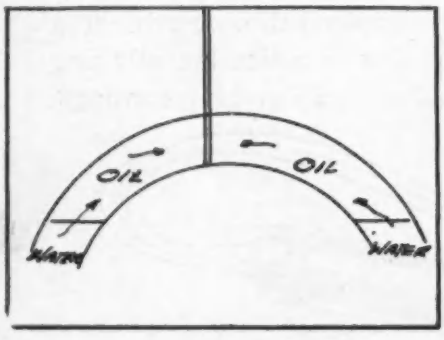


FIGURE 1
Water Drive

ten years or so been more and more efficient as a recovery controlling factor in that he has accepted oil production primarily as a reservoir and not a well problem, and endeavors to attain maximum ultimate recovery rather than high present well potential.

There is no physical reason for doing otherwise since the source of energy necessary to move oil from the sand to the well bore is a combination of pressure differential with either gas or water or both contained in the reservoir itself—plus gravitational affect in some cases. Well condition and prudency of operation most certainly affect ultimate recovery but they partially do so by controlling energy release from the reservoir. It is readily seen that secondary-recovery prospects of a pool may depend to a strong extent on the operator's or engineer's dexterity during the primary production period. It may be said that a large percentage of the oil pools now in the stripper stage have sufficient quantities of oil remaining in the reservoir to make secondary recovery volumetrically profitable since those pools were developed and partially depleted before too much thought was given to energy conservation by the industry as a whole. Wholesale waste of oil-moving energy has left many reservoirs requiring energy replacement or secondary recovery if production is to be sustained or increased. Initial investigation by an engineer to ascertain possible quantity of oil remaining in the reservoir following flowing and pumping is simplified if he knows what kind of drive or combination of drives or drainage, existed in the pool during the flowing and pumping stage. If known, the percentage of oil remaining in place may be roughly ascertained before too detailed investigation word is carried out.

Oil itself does not possess any self-moving power and crude oil produced from a well in natural production stage is moved from the reservoir to the well by either gas, water or gravitational force. Oil in a newly drilled pool is found to be saturated, to a variable degree with gas, which is liberated into a gaseous state by lowering of pressure on the reservoir. The oil may not be fully saturated with gas, and there may or may not be free gas in the pool. In any event as soon as production is taken from the reservoir there is a gradual ex-

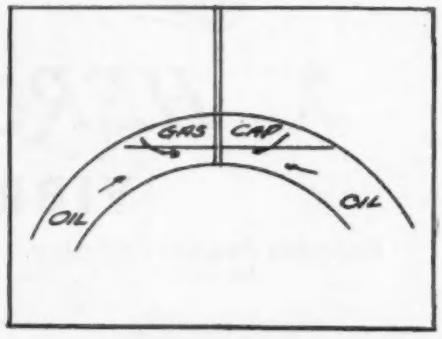


FIGURE 2
Gas Cap Drive

pansion of the remaining contents of the reservoir to fill the space vacated by the withdrawals. A pool-wide reduction in reservoir pressure takes place and a compensating volume of gas comes out of solution, the volume of the reservoir affected being in ratio to produced volume. As withdrawals increase, gas is liberated from solution over a large zone. The pressure differential existing between undrained portions of the reservoir and the well bore tend to cause migration of the reservoir contents towards the well bore, however due to a combination of factors gas moves more readily than does oil. Details of how gas "drives" oil to a well bore are not positively known, but it definitely does "drive" a portion of the oil between the point of gas liberation and the well bore, to the well bore. Slippage of gas through the oil and a low moving efficiency is readily visualized. Relative oil moving efficiency of a gas unit moving through a reservoir during various periods of a pool's life and across various pressure differentials are not known but most certainly would exert a strong influence on pressure-maintenance and repressuring operations if known.

As the amount of gas in a reservoir is limited, it may be seen that a gas-drive pool's ability to produce oil is decreased as its producing energy is decreased, or gas is liberated and produced. Injecting produced gas back into a reservoir maintains reservoir pressure, decreases the rate of gas liberation per barrel of oil produced and thereby increases ultimate recovery. The basis for pressure maintenance is readily seen.

Water Drive Efficiency

Water-drive pools accomplish the same end as pressure maintenance only more efficiently, if properly controlled, in that water encroaches in the oil-bearing portion of a pool as the reservoir pressure in that zone is released; volume occupied by oil and gas in the reservoir is replaced by water, and pool pressure is maintained.

An essential point which should never be overlooked by an operator is that ultimate recovery from a pool depends upon how efficiently the producing energy of a pool is utilized.

Engineers have generally accepted oil pools as being three general types: Water drive, gas-cap drive, and dissolved-gas drive. Each of these different categories

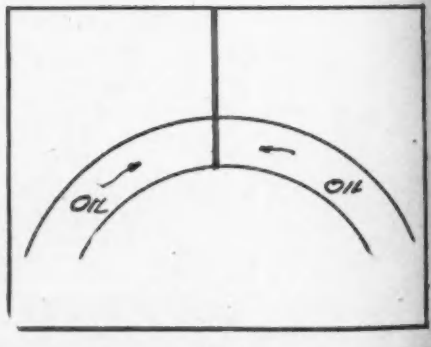
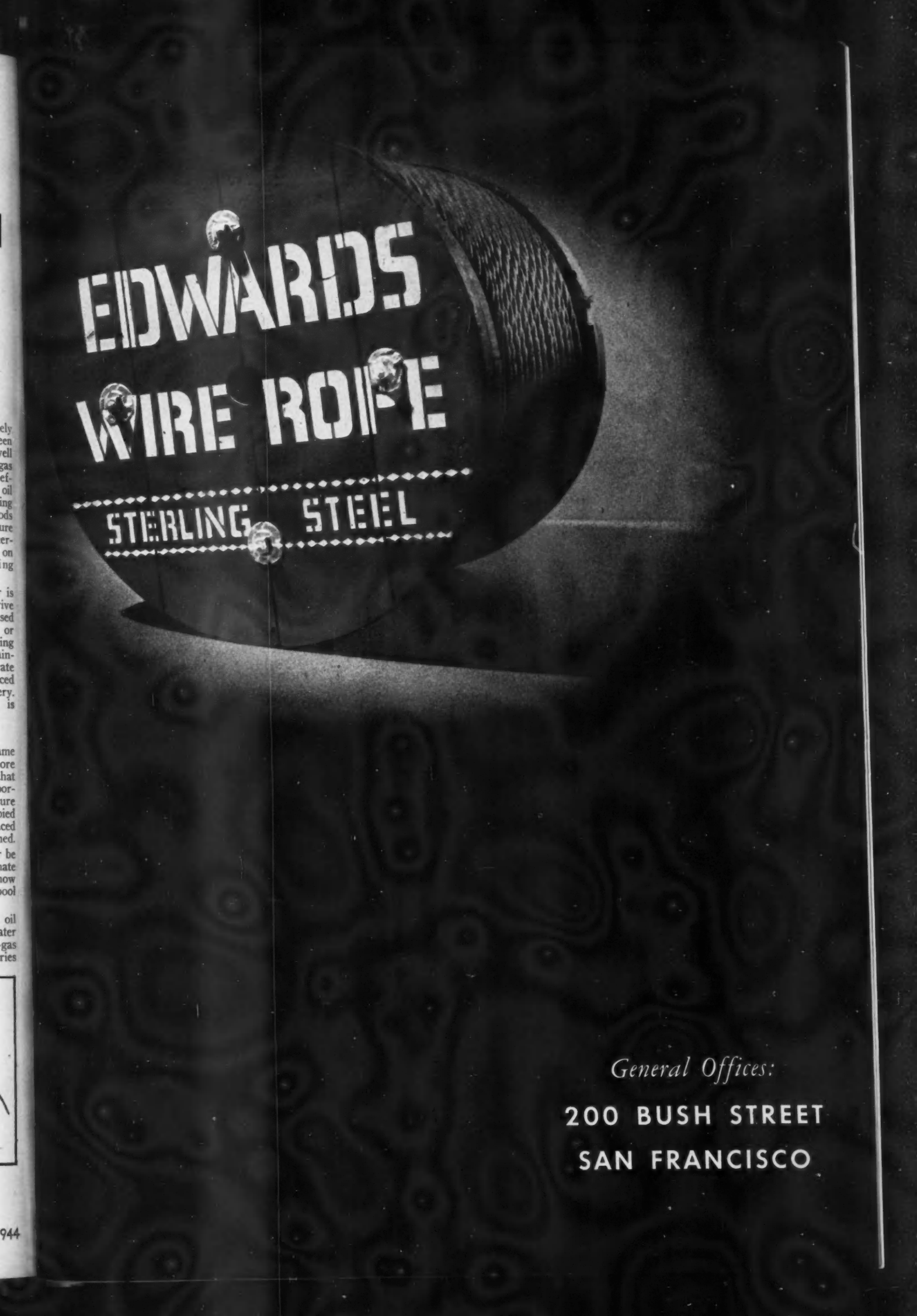


FIGURE 3
Dissolved Gas Drive



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possess different recovery efficiencies. The water-drive pool is the most effective if properly controlled, leaving theoretically only that oil unrecovered which adheres to the surface of reservoir particles and in small pore spaces. This of course parallels the artificial water drive as now employed by engineers and is thought to recover from 60 to 80 percent of the original oil. Many engineers and operators now agree that water drive, either artificial or natural, regardless of controlling efficiency and if performed in a time period limited by present economic structure of such a program does not recover more than 75 to 80 percent of the original oil in place.

Figure 1 illustrates the principal of a water-drive pool. As pressure in the oil-bearing position of the pool is reduced by withdrawals, bottom-hole or edge water encroaches due to the created pressure differential. In doing so a flushing, flooding or driving action is provided in addition to maintenance of pressure. Migration of the water is of course easily detactable. A very graduad bottom-hole pressure gas-oil ratio and potential decline identify such a pool.

A gas-cap-drive pool is illustrated in Figure 2. Oil-moving energy is supplied not only by dissolved gas coming out of solution and moving towards the well bore, but also by the compressed "piston" or gas cap, which if properly controlled furnishes considerable pressure differential or expulsive force throughout flowing and pumping life. Since the volume or size of this "piston" is definitely limited by certain physical factors, the driving action is not so efficient as a water drive. Its ability to maintain reservoir pressure and drive oil decreases as gas and oil withdrawals increase and the piston expands. The source of oil-moving energy in such a pool demands that reservoir pressure and oil potential decline at a faster rate than that of a water-drive pool. Whereas a water-drive pool maintains reservoir pressure more constantly and results in fairly uniform gas-oil ratio, gas-cap-drive pools possess higher total-gas-to-total-oil ratios which increase during pool life. Exclusion of free-gas production from the ratio results in a more uniform value. It is theoretically conceivable that a gas-cap pool may approach a water drive in efficiency and have only about 25 percent of the original oil, however the percentage remaining in the pool is believed to be between 30 and 70 percent. Such a pool provides interesting prospects for secondary recovery, or at least warrants careful consideration before condemnation.

Figure 3 illustrates a dissolved-gas-drive pool. Oil-moving energy is in the form of dissolved gas coming out of solution, when reservoir pressure is lowered, and moving towards low-pressure zones, or well bores, carrying or flushing the oil with it. Rates and amounts of gas which will come out of oil under different pressure and temperature conditions may be definitely determined. Withdrawals from the reservoir result in lowering of reservoir pressure, liberation of solution gas, and gradual decrease of oil-moving energy. Such a pool is very inefficient and recovers comparatively small amounts of oil. Limited and non-replaced energy will of course result in rapid reservoir pressure and potential declines. Gas oil ratio will increase from a comparative low value to a peak, as reservoir pressure drops, followed by a rapid decline. Oil recovery probably is not more than one third of that originally in place and excellent prospects are offered for secondary-recovery operation.

Characteristic features of each type pool are known and accepted generally by petroleum engineers. Laboratory and field experience and observation have made these facts known. Efficiency with which each type pool is controlled by present-generation engineers will to a strong extent influence the required ingenuity of secondary-recovery operators of the future. The present stripper pools offer better prospects to secondary recovery than will the stripper pools of the future after being abandoned by competent engineers.

Illustrations used of the type pools and general features discussed are of a very "textbook" nature. It would exert ones imagination to visualize such a pool. Actually reservoir structures are very complex not only in structure and composition, but in content and nature of drive. Competent analysis and accurate records are necessary to define a pool since most pools are usually a combination of all three types, although one or two types of drive may be of insignificant importance.

The past history of a pool is exceedingly important to the secondary-recovery operators and must be shrewdly analyzed. If sufficient data are available the reactions of a reservoir to a given set of conditions may be roughly ascertained. That is what a petroleum engineer engaged in secondary-recovery work need know. If he knows how the pool has reacted to certain physical conditions in the past, he may visualize probable reaction to secondary recovery.

If the data indicates that a pool may be economically susceptable to secondary recovery the engineer must know how much oil is still in place, artificial condition which must be created to move it, and how much will be recovered. The first item is ascertained by geologic study and core analysis. The solution is simply one of volume, limited in accuracy by variables in the reservoir. A small operator may be content necessarily to calculate sand volume under his property by cross sectioning, from well-log data, thoroughly enough to compute actual volume of saturated sand. However, for purpose of accuracy core analysis should be made to determine presence of irregularities, faults, tight zones, breaks, crevices, poor-saturation zones, actual saturation zones, sand characteristics, etc. A cross section along this long axis of the pool coupled with an adequate number at right angles across the pool give an accurate picture of pool structure. From such cross sections sand volume is easily ascertained. The total volume of oil in place is then obtained by analyzing sand cores to determine porosity and saturation, or percentage of the total pore space occupied by oil, and applying this to sand volume. Accuracy of this calculation of course will depend to a large degree upon the number of cores taken. Core wells located in a geometric pattern to be used later as imput wells usually give a good, representative picture.

From this total oil volume then should be deducted oil non-recoverable by secondary recovery to estimate total recovery from a secondary operation. A major contribution to this non-recoverable volume is that oil, or residual saturation, which adheres to reservoir surfaces or is in tight sand zones and cannot be recovered by present methods. Any operator will not be far wrong if he uses a "rule-of-thumb" figure of 20-25 percent after water flooding and 35-40 percent for gas or air drive. These values are variable over a considerable range and should not be accepted as exact. Figures used are rough averages and serve their main purpose here in illustrating importance of determining their value, either by laboratory work or experience in the area.

In order to better visualize reservoir conditions, core data should be profiled, an example of which is Figure 4. Vertical continuity of oil saturation, porosity, sand composition, irregularities, permeability, connate water content, and thief zones are illustrated.

Permeability, or resistance to flow, is of extreme importance. Oil in the tight or low-permeability sections has been drained

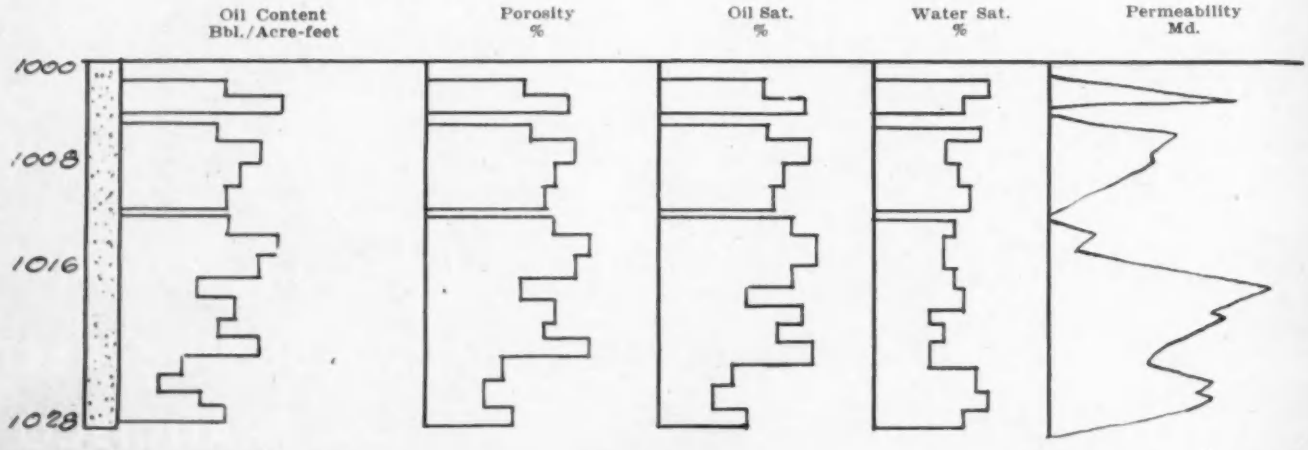

FIGURE 4
Hypothetical Core Profile. (Not to scale)

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to a lesser extent than that in the high permeability sections and accordingly plays an important part in secondary recovery.

The problem is to flush oil from such tight sections without having the injected media channel or by-pass to a producing well through the high-permeability sections. This will be discussed in future articles of this series, but the fact stands that oil recoverable by secondary recovery is still further decreased by sand characteristics. A highly permeable zone in a normally tight sand will readily accept gas air or water and be quickly flushed of oil. However when that point is reached, air, gas, or water injected merely travels through this flushed portion of the sand, bringing very little if any oil with it. If controlling steps cannot be taken, by either input-well completion method or operational control, recoverable oil may roughly be confined to a portion of that contained in the loose section. Effect of permeability on total recovery, either by flooding or repressuring, depends not only on the overall sand value, but also on extremeness of difference between zones, or strata, of the sand itself.

Total Pore Space

As secondary recovery is essentially, a replacement proposition, careful consideration should be given to amount of total pore space and its division into gas and oil saturation, connate-water and vacant-space percentage.

Some engineers are of the opinion that low connate-water—high oil-saturation ratios are susceptible to water flood, while the reverse ratio is better for re-pressuring. Much correlative and investigational work need to be done along this line before empirical statements may be made, however there appears to be logical reasoning behind such a belief.

In addition to "non-recoverable-oil" factors mentioned shrinkage of oil volume by liberation of solution gas should not be overlooked as it may be of prime importance.

Numerous experiences and publications have amply illustrated the sound value of core analysis not only in investigational but also in operational control. However, it should be remembered that value of a laboratory analysis depends to a large extent upon the method of taking cores and transporting them to the laboratory. Coring in oil-base muds reveals a truer picture of reservoir content since the flushing action afforded by coring in water is not present. The core should be sealed in some type container to minimize losses before analysis. Small liquid losses from a core is reflected to large degree when placed on a reservoir basis by the large degree of magnification. Such losses could easily mean the difference between a condemned project and starting of a profitable one.

Too much accent cannot be placed on proper core technique since it eventually plays an important role in investigational work.

Non-uniformity of sand, both as to structure and composition, and its influence on fluid movement in a reservoir increase the complexity of any secondary-recovery project. Actual reservoir conditions any horizontal distance from the well may not be definitely predicted by geology or core analysis, but useable assumptions may be drawn if accurate records were kept during life of the pool. A competent petroleum engineer's efficiency is, within certain limits, in ratio to data available for interpretation.

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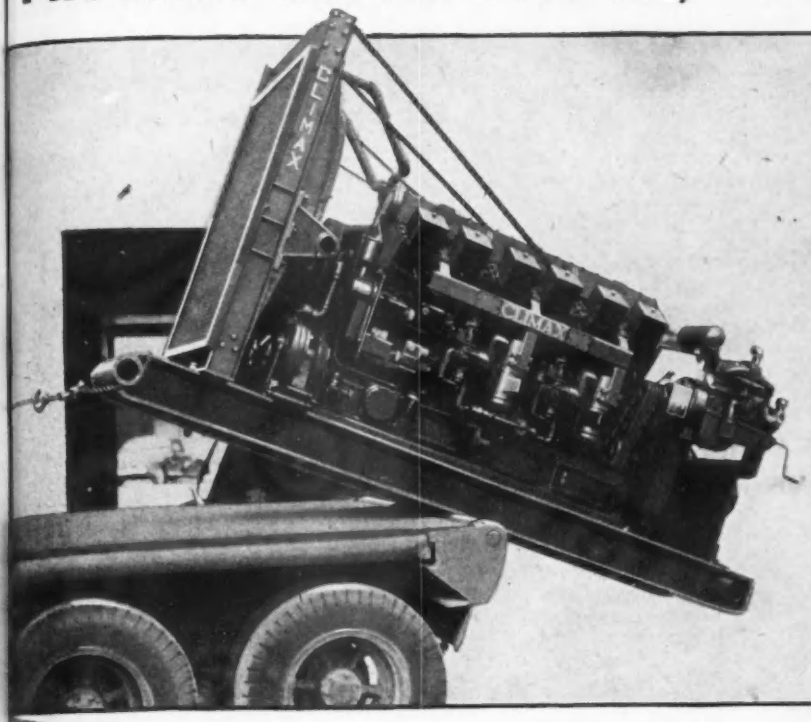
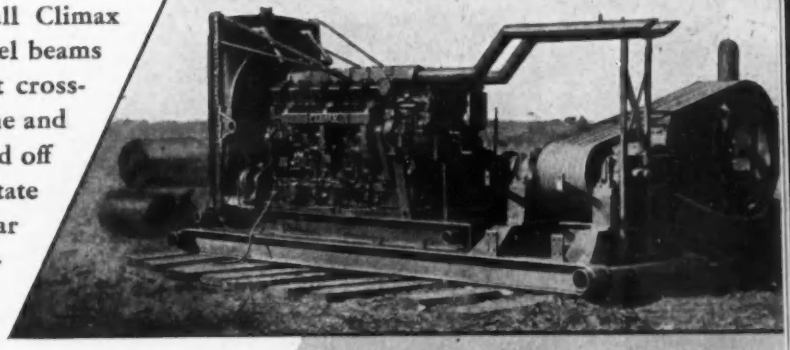


Oilfield type welded steel skids provide a rigid yet readily moved foundation for your Climax drilling engine. The power plant, completely assembled and aligned, may be loaded directly on to the truck and hauled to a new location. Additional time is saved when hooking up the engine to a rig or pump.



These skids, furnished as standard equipment on all Climax engines, are made of special wide-flange structural steel beams bolted directly to the box type engine base. Sufficient cross-members are used to make a rigid mounting for engine and all accessories. The radiator end of the skids is rounded off and welded to a heavy steel pipe cross-piece to facilitate handling. The power take-off end is held in a similar manner but has a built-up boiler-plate section to support the take-off shaft. This support keeps the shaft in alignment and prevents damage to clutch and bearings from shock loads or belt side-pull.

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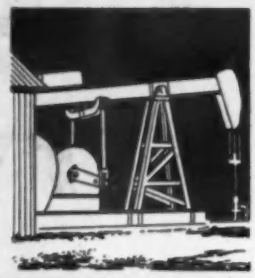
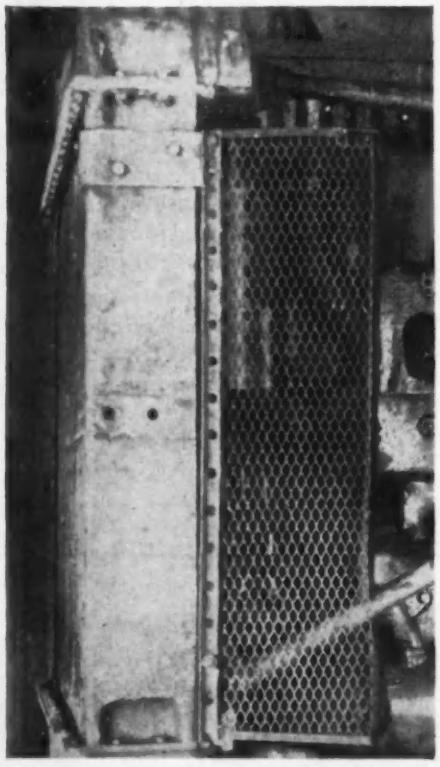


OPERATING HINTS *For Production Men*

Mesh Grille Safeguards Radiator Cooling Fan



Bracketed along sides of the radiator shell, these open mesh guards protect without obscuring fan.

POWER UNIT SAFETY

Operation of power units with self-contained cooling systems introduces an accident hazard at the edge of the radiator. Servicing or lubricating the unit while in operation may bring the operator's hand or arm dangerously close to the fan, its heavy blades revolving in a circle close to the outer edge of the radiator case to insure adequate air volume through the entire cooling area.

To safeguard this danger zone one station engineer erected light shields of expanded metal, bolted to arms on the side of the radiator shell. The shield does not prevent visual check of the fan, water pump and other engine-front accessories, and has no appreciable effect on air circulation, yet it effectively covers the sweep of the fan blades.

For engine servicing, the guards may be removed with the radiator shell, or may be dismounted by loosening the brackets or attaching bolts.

The screen also safeguards the fan assembly by protecting it against wiping rags, swinging lines or flying missiles of size sufficient to cause damage should they reach the fan.

Hinged Flume Covering Cuts Tank Farm Accidents

TANK DRAINAGE

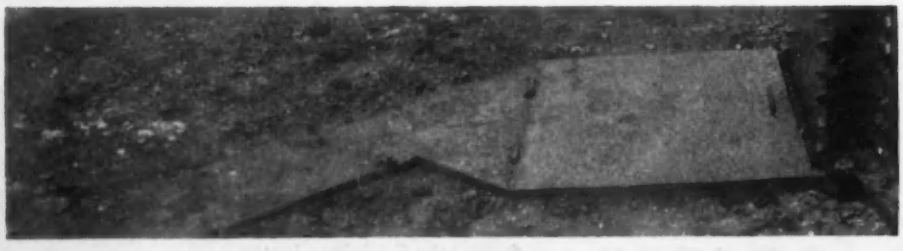
Avoiding the hazards of open drainage flumes at the clean-out openings of tanks, one company fits hinged sections or lids over the flume at the wide portion directly in front of the tank aperature, covering the remainder of the ditch with tightly fitted plates which insure against fluid or gas leakage.

By fitting the cover to open away from the tank, a wide catch basin is provided when b.s.&w. is being scraped out, and sufficient flow capacity is provided to insure against fluid loss when the lower edge of the tank cleanout cover is loosened.

Where a fairly wide basin is desired, it is possible to stiffen the relatively light tank steel cover plate by welding one or more ribs of angle iron across the lower side of the cover. These reinforcing webs are thus out of the way when the flume is not in use, and cannot constitute a hazard to personnel as would be the case were they welded atop the plate.

By setting the branch of the flume at an angle to the catch basin, as shown in the illustration, the lifting handle of the cover may swing into the clear, and overhang the flume when the basin is opened for use.

An alternative to the welded lifting bail is one which drops through the cover to reduce hazard.

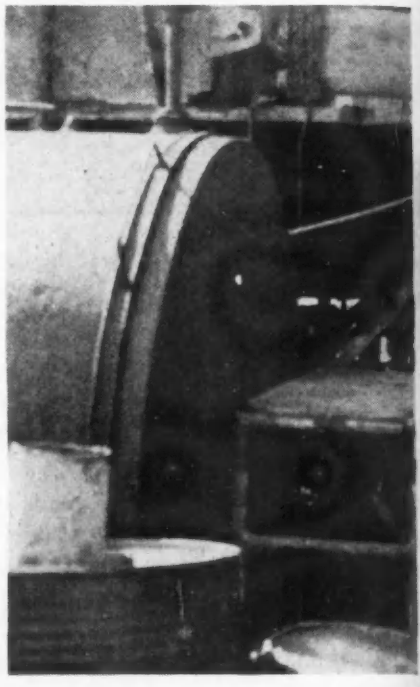


By bracing and hinging the cover for the catch basin at the tank cleanout opening, safe traffic across the flume is assured and entry of much wind-blown debris prevented without impeding use.

Ladder Platform Speeds Elevated Tank Gauging

FUEL HANDLING

To facilitate gauging of the overhead fuel tank, one operator constructs a double ladder of scrap pipe, carrying the rectangular frame high enough to afford proper stance when checking or adding fuel. The side braces of the structure are the ladder rounds, with the posts serving for handholds, and with the outer two corner posts carried above the working platform and brought together in a smooth arc to form continuous handrail and back stop.



Adequate working space insures accurate gauging or handling of fuel lines at overhead tank.

Corks Prevent Fouling Of Vertical Flow Lines

TRUCKING TERMINALS

Where production must be transferred to trucks for transportation outside the lease, shortage of materials frequently imposes a loading manifold which is nothing more than a series of risers, each topped with valve and terminating in a connection for the tank-truck loading hose.

Sand, dirt and water tend to collect in the riser and to become attached to or score the sealing surfaces of the valve when it is oper-

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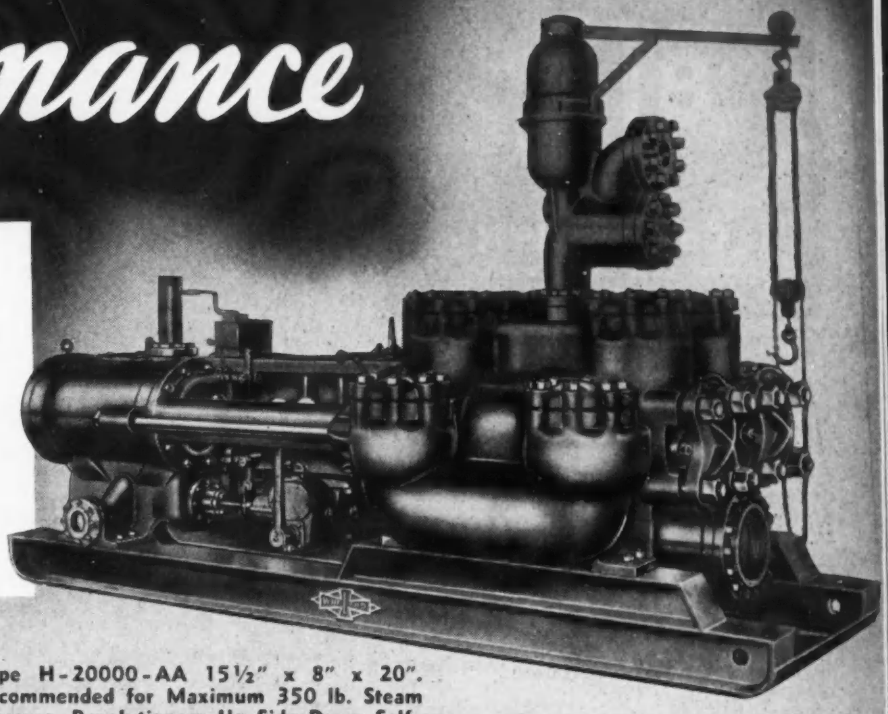

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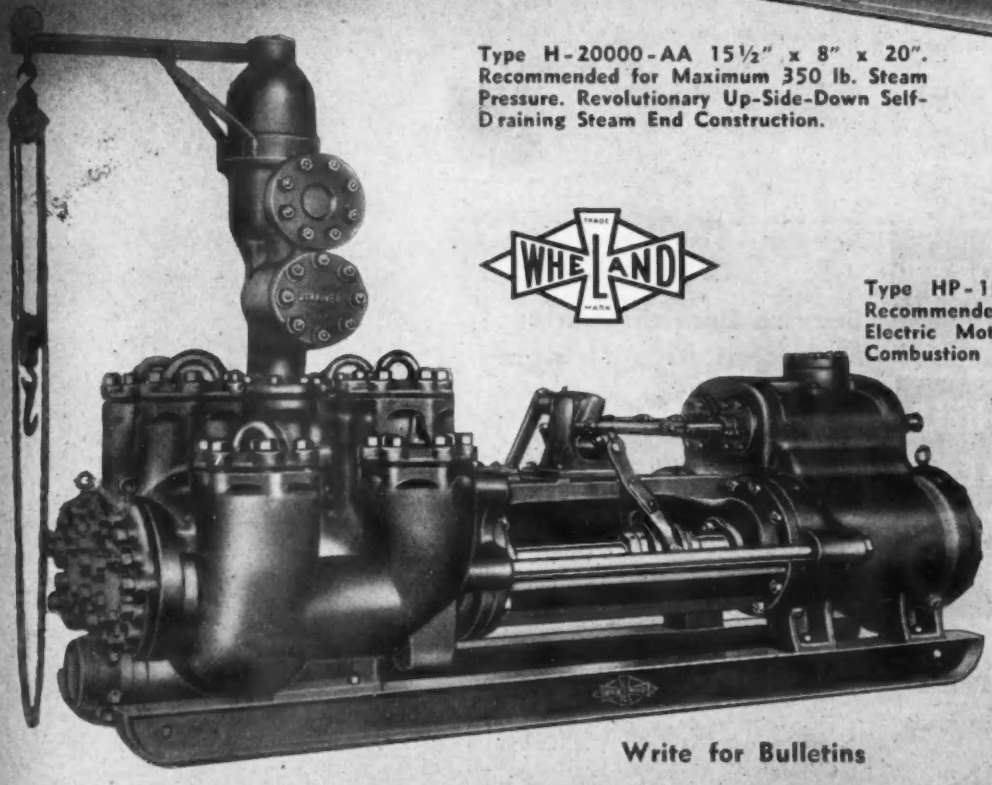

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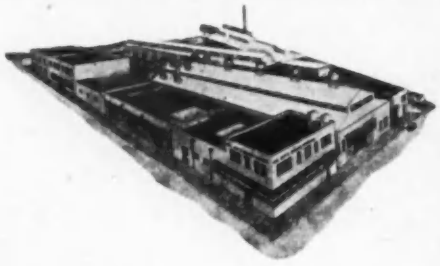

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ated. The use of a cork of the proper size, simply forced into the open end of the hose connection after the hose is withdrawn, affords seal against the entry of grit, and is readily removed when the hose is to be attached.

The cork, attached to the riser with a piece of cord short enough to insure clearing the ground, is always at hand when needed, and does not involve the expenditure of badly needed metals, as would the alternative plan of using blinded extra hose couplings.

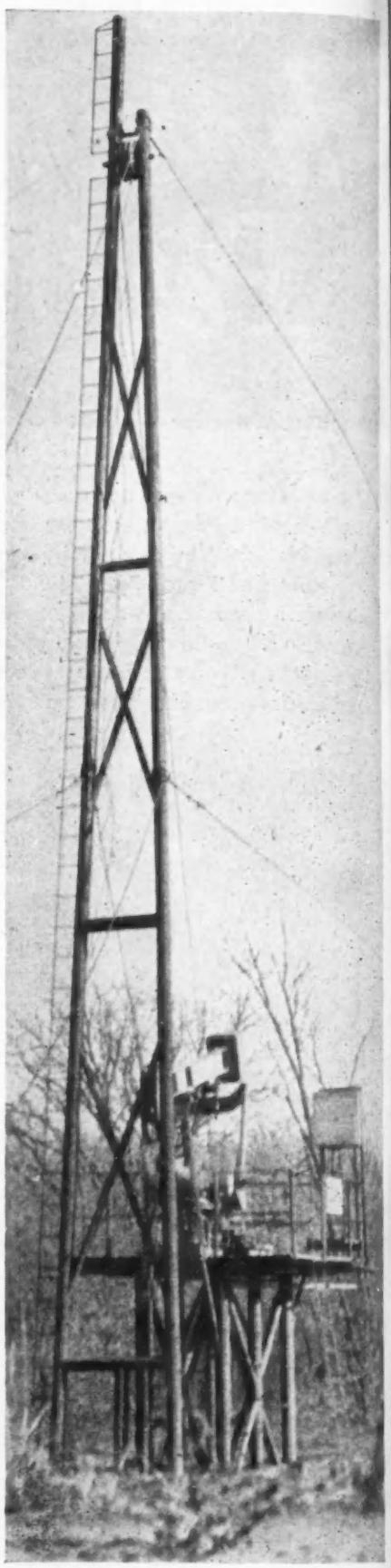
Cork, attached with short chain, is always handy for closing riser end when hose must be transferred.

Service Derrick Ladder Extension Aids Stringing

SERVICING DERRICKS

Extension of the usual ladder incorporated along one side member of the service mast so that some 5 or 6 feet project above the crown block has been found by one company to reduce the strain on the operator when working aloft. The effort of lifting the line to place it on the sheave is changed from the awkward one of striving to push the wire into place to the much more effective pull exerted on a load at or below the point of support.

The only change in the A-frame is the use of some 6 feet of additional pipe on the ladder side, and the provision of some non-skid step material at the top of the other leg, so as to provide proper footing which, with a safety belt around the extended mast member, enables the worker to devote his entire attention to the job of placing the line.



Carrying one leg of A-frame above crown block setting insures safe grip and stand for operator.

$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

Blowouts—
Their Causes and Prevention

PART 1

Preventing Causes Under Control of Management

Much could be gained and great benefits would result if continuous study were made of all serious blowouts and report made to industry by central technical group. Blowout causes fall into two classes, those controlled by management and second, those under the control of subordinate personnel. Preventive measures and safety devices are "must" and very cheap compared with possible loss

By MADDEN T. WORKS,
Chief Engineer, Cameron Iron Works, Inc., Houston

WHEN it was suggested to the API Southwestern District tropical committee on drilling practice that a study be devoted to this subject, it was realized that the industry already was in possession of rather extensive information as to both the cause and prevention of blowouts, this information having been disseminated not only through the medium of several excellent technical papers on the subject (see bibliography) but also through efforts of service organizations and manufacturers which supply well-control devices. However, in spite of considerable general knowledge on the subject, uncontrolled blowouts are continuing to occur. There are no accurate records available, so it cannot be said whether the percentage of occurrence is increasing or decreasing, but the fact that there were 30 serious blowouts in the Gulf Coast of Louisiana and Texas during 1943 is sufficient cause for reviewing the situation and bringing as much concerted effort as possible to bear in an attempt to reduce this vast physical and economic loss.

THIS paper, which will be published in two parts, is offered as a preliminary review of the subject and classifies the various causes of blowouts under two main groups:

I. Those causes under control of management.

II. Those causes under control of subordinate personnel.

In addition to discussing the causes under control of management, and their prevention, Part 1 suggests the subject is of sufficient importance to warrant group study, leading to a series of papers, each devoted to a particular phase of the topic. It also suggests that much of value could be accomplished in time, if details on each blowout were reported to a central technical group, which could disseminate new ideas and methods throughout the industry.

Part 2, to be published next week, suggests that the use of posters offers great possibilities as a medium of answering the need for a comprehensive educational program in preventing causes under control of subordinate or field personnel.

This paper was presented before the Spring Meeting of the Southwestern District of the American Petroleum Institute's Division of Production, June 13-14, 1944, Houston.

It is recognized that the problem of well control is extremely wide in scope and has many ramifications. For this reason, it is thought that the problem is essentially one for group study, and that a series of papers, each devoted to a particular phase, will be required to cover the subject. Various operating companies have been most cooperative in exchanging ideas and information. However, to date there has been no adequate machinery set up for keeping all information on a current basis, and for disseminating new ideas and methods throughout the industry. It is believed, and suggested, that if arrangements were made whereby a technical group could receive complete and detailed information on a large number of previous blowouts and also on each new blowout which might occur, that in the course of time and by means of periodic reports, much of value could be accomplished. In collecting data prior to the preparation of this paper, the topical committee sent a questionnaire to operators who had had blowouts in the recent past. The cooperation offered by those replying was quite gratifying and, although there was an insufficient number of wells reported on to permit any general conclusions, it could be readily seen that the extension of such a reporting system would be of inestimable value.

It is not feasible to attempt to cover the subject of the causes of blowouts and their prevention in a single paper. A more extensive study certainly should be instituted before attempting to offer any concrete solutions. However, since the questionnaire gave definite indication that many blowouts can be traced to bad practices, the topical committee believes that a preliminary paper which would be, primarily, a review of the situation would aid in focusing the attention of the industry on certain phases of the problem which, it appears, may have not had enough attention directed to them recently. This paper, therefore, will attempt to restate known causes for blowouts and make suggestions for an educational program, for it is certain that nothing can be accomplished toward reducing the number of blowouts unless the entire operating personnel of the industry, from top to bottom, is made thoroughly conversant with the problem. This paper will be devoted to the problem of blowouts on drilling wells only, as loss on control of producing wells is an entirely different phase.

It is relatively easy to make a list of possible causes of blowouts and it is relatively easy for one "skilled in the art" to set opposite each cause preventive measures which, if followed, would preclude their occurrence from that cause. This would be the correct procedure if it were not for the very important factor that wells are drilled by men and, consequently, the human element is likely to upset the nicest of plans and calculations. Blowouts caused by "acts of God" fortunately are few in number and their probability of occurring is quite slight. Since there is admittedly nothing, so far as is known, that can be done about a situation such as storm or lightning destroying surface control equipment, it would be rather pointless to dwell upon it to any extent.

However, certain other causes which, while they cannot truly be termed "acts of God," approach that classification in that blowouts may occur when these conditions are encountered for the reason that stresses may be placed upon control equipment in excess of even the most conservative allowance for factors of safety. For example, abnormal pressures may be encountered of a magnitude which cannot be coped with by even the most carefully selected equipment. Another such eventuality is the sudden loss of returns in cavities, crevices, etc. However, if adequate control equipment has been provided in the first place, a wild well will not result from lost returns unless the sudden loss of the mud column permits an uprush of sufficient violence to damage the pipe or control equipment. Of course, when either zones of abnormal pressure or caverns underlying gas sands are known to exist in a given area, trouble resulting from these causes cannot conceivably be passed off as being "acts of God."

Two Groups of Causes

Another cause of loss of control on drilling wells that is extremely difficult to classify is mechanical failure. Of

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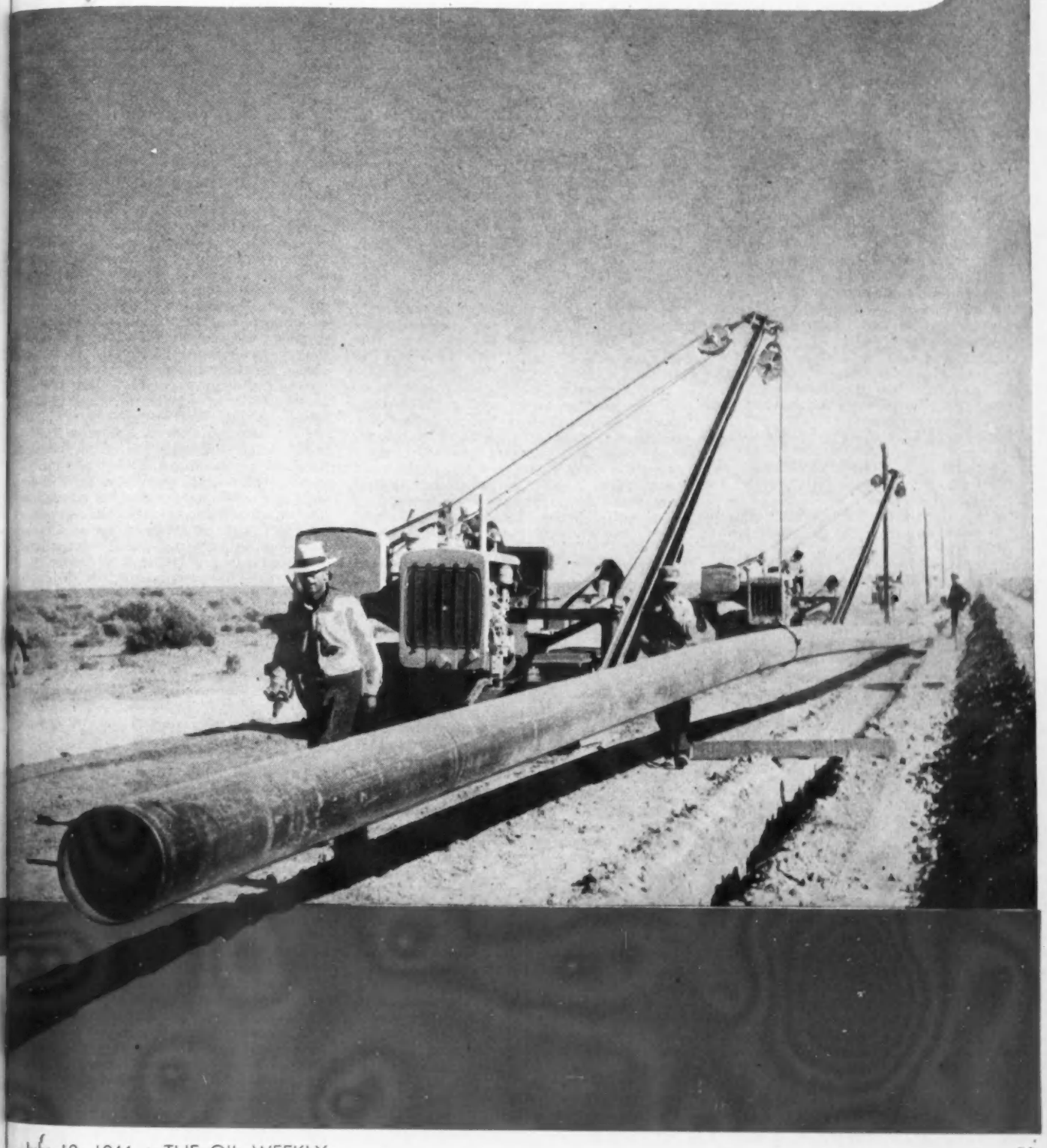

course, it is not difficult to classify mechanical failures which are brought about by the equipment being called upon to perform tasks for which it was not designed, but the failure of carefully selected and pre-tested equipment apparently in a good state of repair is another matter. Fortunately, failures of this nature are extremely rare. It might be said that while blowouts due to so-called "acts of God" can and do occur, the probability of their occurrence is extremely slight and the tendency of wanting to place *all* blowouts in this category should be avoided.

Now, if we return to the list of blowout causes mentioned above, it is readily apparent that responsibility for permitting these causes to exist on any operation may be assigned to the two main divisions of operating personnel. That is, there is a group of causes over which management alone has control, and there is the other group of causes which fall under the control of the personnel actually executing the work in the field. That is, the list of causes may be divided and tabulated in the following manner:

I. Causes Under Control of Management

a. Use of improper drilling mud.
b. Failure to provide an ample reserve supply of mud.
c. Inadequate mud pumping equipment.
d. An inadequate casing program.
e. Inadequate, obsolete, or worn out control equipment.
f. Lack of periodic inspection of vital equipment and failure to authorize necessary repairs.
g. Failure to give complete and concise instructions to subordinates, and insufficient supervision.
h. Lack of a practical educational and safety program.

II. Causes Under Control of Subordinate Personnel

a. Drilling gas sands too fast.
b. Pulling drill pipe off bottom too rapidly.
c. Balling up the bit or drill collar by drowning in sticky formations.
d. Using too large a diameter drill collar.
e. Pulling pipe out of the hole before the mud is in proper condition.
f. Failure to run fill-up pump frequently while pulling pipe from hole.
g. Use of low pressure fittings in high pressure control manifolds.
h. Procrastination in making rig repairs.
i. Continuing to drill or circulate during a heavy rain.
j. Failure to maintain the reserve mud supply in condition for use.
k. Lack of general vigilance for the unmistakable signs of gas.
l. Failure to obey specific instructions.

There is nothing new in the above list except, possibly, the classification into which the causes have been placed.

"Blowout Conscious"

The management of most operating companies makes considerable effort toward observing the best practices known. However, even the best of them seem to occasionally slip into bad practices, possibly due to over-confidence resulting from long periods of trouble-free operation. Then, there is a certain class of operators, which is in the minority, which seems to insist on multiplying hazards of well drilling by continuously indulging in careless and imprudent practices. Such management cannot in most cases offer the excuse of either oversight or ignorance, and the only other excuse that may be offered is one of economics. It is the stated purpose of this paper to suggest an educational program which might help make the entire industry blowout conscious. However, it is extremely difficult to offer concrete suggestions as to a program that will successfully reach not only the black-sliding good operators, but also the operators who indulge in bad practices as a result of false economy.

Since there seems to be no effective way of forcibly drawing the negligent operators' attention to the fact that careful and prudent practices are the cheapest insurance, advertising and educational measures both verbal and otherwise must be relied upon. Insurance companies have done an extremely good selling job in that no one, whatever his business policy might be, will allow his life insurance to lapse except under the direct circumstances. Therefore, it appears that the oil industry may have a setting job to do in inducing the "black sheep" always to carry plenty of insurance in the form of the best practices. Of course, many operators can exercise considerable control by specific attention in their drilling contracts to the various causes of blowouts. Also, there is the expedient of controlling drilling practices by legislation. However, neither one of these methods can be entirely effective, and it certainly goes without saying that the less legislation involved the better, and this step should be taken only as a last resort. Therefore, it appears that the best plan is simply for the good operators to devote some time to selling the not-so-good operators on the idea that the relatively small cost entailed in following the best practices is more than amply repaid from the standpoint of protection. Such a program should serve the further purpose of tending to keep the better operators "on their toes" and blowout conscious at all times.

Causes Under Control of Management

In reviewing the list of causes of blowouts which come under the control of management, it can be shown that there is actually very little cost involved in circumventing any of the causes. Let us look at each of them.

I-a. Use of Improper Drilling Mud. What proper mud is, of course, varies for different conditions. Probably the best way of being reasonably sure that mud will be proper for the given set of conditions is to employ a competent mud engineer and make it his responsibility to see to it that the drilling mud is at all times in proper condition. The cost of a mud engineer's salary plus cost of necessary chemicals, weighting materials, etc., over a period of years will be almost insignificant compared with the cost of a single serious blowout. Many operators shy away from such a program for the reason that they have heard tales of extremely high mud costs on certain wells where the mud was the responsibility of the mud engineer. However, they overlook the fact that, in most instances, the cost was entailed by extremely difficult operating conditions and that if the money had not been spent on mud control a much larger sum would probably have been spent on getting out of serious blowout trouble. Also, records of major companies positively show that mud costs are actually less when the mud is under control of a competent mud engineer rather than under control of drilling crews, for the reason that one untrained in the art of mud treatment almost invariably overtreats, thus causing a wastage of treating materials. Therefore, a carefully planned and engineered mud control program should be considered as good insurance purchased at a bargain price.

I-b. Failure To Provide An Ample Reserve Supply of Mud. This cause of blowouts is closely allied to the ones just discussed. As stated by Carpenter[6]: "In most instances, inferior drilling fluid is transferred to reserve pits; and no effort is made, in all fields, to recondition it unless circulation is lost, a blowout occurs, or replacement of drilling fluid in the hole becomes necessary because of gas-cutting or the precipitating action of salt water. When additional mud is required in a hurry it is usually necessary to stop drilling while reconditioning the drilling fluid in the reserve pit or awaiting purchase and delivery of commercial clays with which to make new drilling fluid. Therefore, as a matter of safety and economy it is important to have in reserve an ample supply of drilling fluid of the proper weight and consistency. When drilling is done in high-pressure gas zones the reserve supply should at least be equal to the total volume of the drilled hole." This point is also noted by Vietti and Levy[5] who state: "Failure to have an adequate reserve mud supply, or supply of commercial material, is inexcusable in areas where mud losses or gas sands may be reasonably expected." Note that these remarks may be combined and paraphrased to the effect that the inexcusable lack of an ample reserve mud supply is false economy.

I-c. Inadequate Mud Pumping Equipment. Even the most carefully planned mud program and the strictest attention to the reserve supply will be of little avail if the mud pumping equipment has inadequate capacity and pressure to meet any emergency since all the functions of drilling fluid, except that of suppressing formation pressure, are performed by circulation. In order to avoid a circulation failure at a crucial moment, it is essential that two slush pumps in good repair, and supplied with ample power, be available. Also, it is essential that pumps be manifolded in such a way that they may be instantly compounded or paralleled, thus enabling the driller to increase pressure and rate of circulation at will.

Summary

The three points which have been discussed above may be summed up with the statement that an ample supply of drilling mud of the proper consistency with adequate circulation under all conditions is the first line of defense against blowouts, and no operator can expect to protect his investment without strict attention to this phase of well drilling.

I-d. An Inadequate Casing Program. Definition of an adequate casing program varies for different areas and conditions in the same way that the definition of a proper drilling mud varies. However, except on wildcat wells, this is a phase of the business which is quite closely controlled by the regulatory bodies of various states. Therefore, it is only on exploratory wells that an operator has much chance to go too far wrong on a casing program.

Since it is a known fact that the majority of blowouts occur on wildcats, prudent operators will devote considerable care to the selection of a casing plan. As a matter of fact, it is highly advisable to have an alternate plan also available for, in drilling unknown formations, unlooked for situations may arise which would necessitate a change in the pipe program at a moment's notice. In view of the rather elementary fact that a good casing program would tend to offset the increased hazard of exploratory drilling, it is rather surprising to discover that in a substantial percentage of blowouts on wildcat wells the reason for ultimate loss of control lies in an inadequate casing program. It appears that the only advance program used by some operators is to set a few hundred feet of relatively large pipe and then drill on down in hopes that no trouble will be encountered. This is a curious attitude—particularly when viewed from the standpoint that the only reason for drilling the well is the hope that oil or gas will be discovered, preferably in copious quantities and at a reasonable pressure. One wonders about the fellow who set less than 500 feet of 13⅜-inch casing and then drilled on without much trouble until gas sands were encountered at around 5000 feet. From there on the mud engineer had the nice problem of keeping the mud heavy enough to hold back the pressure and yet light enough not to be lost to the formations. Finally, at around 6000 feet, this fine state of balance got out of hand and it was necessary to shut in the well with the blowout preventers. In less time than it takes to tell it the well had cratered due to a blow around the surface pipe, and a $150,000 investment in drilling rig and well bore was no more. Would this fellow be hard to convince that a few more dollars spent on surface pipe, and possibly a protection string, would have been cheap insurance?

I-e. Inadequate, obsolete or worn-out control equipment. According to the questionnaire, 66 percent of the operators reporting believe that drilling crews in general do not analyze the basic causes of blowouts, or exercise sufficient diligence, and depend unduly upon equipment to control a situation before it gets out of hand. This is interesting, for it is the positive knowledge of the author that much of the control equipment in everyday use in the field either is entirely too light for the depth being drilled or is in such a state that it could not possibly function. It cannot be understood why some operators, even though they would not consider using a frayed drilling line or worn drill pipe, will be entirely satisfied with anything that is called "blowout-preventer" regardless of its adequacy, age, or condition. The attitude seems to be that since the law requires that wells be equipped with a blowout-preventer, all that is needed is a piece of equipment which is dignified by that time. When this attitude is balanced against dependence of drilling crews on control equipment keeping them out of trouble, one can readily see why many blowouts occur which could have been prevented by greater attention to the control equipment detail.

Good Control Devices

Another point which often escapes proper attention from management is auxiliary equipment, such as fittings, flange bolts, etc., required to hook up control equipment. The effectiveness of the best control equipment can be completely nullified by use of such items as cast iron fittings and undersize carbon steel flange bolts in assembling high pressure connections. It seems that there is no effective way of *forcing* all operators to either use or properly install good control devices as both contractural treatment and state regulations fall short of the desired end. Therefore, here again, an educational program appears to be indicated in order to convince backward operators that a relatively small investment in control equipment will offer protection that cannot otherwise be obtained.

I-f. Lack of periodic inspection of vital equipment, and failure to authorize necessary repairs. This is very closely allied to that just discussed, and it is one that apparently has never received the attention it deserves. One cannot spend much time around a shop engaged in overhauling and repairing drilling control equipmet without gaining the impression that much of the equipment is in considerably worse condition than the owner realized. It is unfortunate that few of the working parts of most control devices are exposed to view, and it is surprising the deplorable conditions in which one will often find the inside of a blowout preventer or valve, while the outside may be in beautiful condition—even to the extent of a fresh coat of paint. Therefore, the conscientious operator should not overlook the importance of thorough inspection of all vital equipment at frequent intervals. The most popular types of modern control equipment are of extremely rugged construction but, under the rough usage to which they are subjected, even the best devices cannot be expected to remain in proper working condition indefinitely without some attention. Also, when equipment is found to be in need of repairs those repairs should be made immediately.

Some opeartors apparently are inclined to use as an argument against these simple rules that the time to do these things is not available without interrupting drilling. This is not a valid argument for two reasons: First, inspection and repairs can usually be made during times when drilling operations have been interrupted for some reason, such as waiting on cement or when moving locations. Second, even if it is necessary to suspend drilling operations when inspection and repairs are made, loss entailed by failure to make hole for a few hours is more than offset by the assurance gained that the control equipment will function properly when it is called into use. Also, one should not overlook the fact that even though the better designs of control equipment are so constructed as to permit simple field repairs, a periodic shop overhaul and test should be the rule if one expects to obtain maximum useful service life and trouble free operation. Following these maintenance practices involves such little cost that even the operator who is barely able to make his payroll should be able to afford them.

I-g. Failure to give complete and concise instructions to subordinates, and insufficient supervision. The necessity of giving complete and concise instructions to men charged with performing a certain task is so obvious that most operators would be surprised to learn that it is not always done. However, several blowouts may be traced to the fact that even though the superiors were aware that certain conditions existed which would require specific action at a given depth, this information was not passed on to the man in charge of the rig. This is one of the contributory causes of blowouts under the control of management that costs absolutely nothing to correct, so the only excuse that any operator can offer who fails to observe the simple rule is, "I forgot." The other phase of this particular topic is, that even though complete instructions are given, insufficient supervision is provided to see that instructions are carried out. One man cannot be expected to adequately supervise several rigs, particularly if they are on widely scattered locations, nor is it physically possible for one man to supervise even one rig 24 hours a day indefinitely without relief. This is a point that certainly deserves careful consideration on the part of management, for it cannot be mere coincidence that a large percentage of the blowouts occur when no one is present at the rig but the drilling crews.

I-h. Lack of a practical educational and safety program. This cause, the value of which has been stressed by all writers on the subject of blowout prevention, is listed as a cause under control of management, because any such program must be instituted and directed by personnel in this group. But because it would be directed to subordinate personnel so as to call their attention to the various hazards and bad practices, it will be discussed in Part 2, which deals with prevention of causes under control of subordinate personnel.

• TO BE CONTINUED

Legislation Would Lease Louisiana Bird Sanctuary

A bill pending in the Louisiana legislature authorizes the State Minerals Board to lease the 79,000-acre bird refuge on Marsh Island, New Iberia Parish, for oil development. Russel Sage Foundation, which donated the refuge to the state, would receive half of any royalties, the other half going for other conservation uses. Drilling is underway in the Rockefeller preserve in Cameron and Vermillion Parishes, recently leased by the mineral board.

Booklet Tells of Electric Spark Ignition of Gases

The Bureau of Mines, Department of the Interior, Washington 25, D. C., announces a new publication, Report of Investigations 3753, "Apparatus for Determining the Minimum Energies for Electric Spark Ignition of Flammable Gases and Vapors." The publication describes new devices intended to provide additional information on static electricity, especially for determining just how potent an electric spark must be to ignite explosive mixtures of gases and vapors. Construction of the a apparatus and descriptions of its use are included in the publication.

C. M. KELLER, district landman for Tide Water Associated Oil Company at Evansville, Indiana, has moved to Oklahoma City, succeeding Floyd Newlin who has been transferred to Wichita, Kansas.

More Activity Between Regular Meets Is Suggested as Oil Compact Program

Opposition to further acquisition of lands by the federal government was voiced at the Interstate Oil Compact Commission at its recent meeting in Denver. Eight of the 13 states which are members of the Compact had representatives at the meeting.

E. G. Dahlgren

The group also went on record in favor of a higher price for crude oil. Governor Andrew Schoeppel of Kansas, chairman of the Compact, and Governor Robert S. Kerr of Oklahoma, thought the increase should range from 35 to 50 cents per barrel. This sentiment was echoed by Governor Lester Hunt of Wyoming.

Kerr pointed out that smaller operators receive their entire income from production. The price now prohibits the accumulation of sufficient funds for these men to do the exploration work which the nation needs.

"The future of the nation," Kerr declared, "rests with the wildcatter—the man who seeks new fields and finds them."

Carl A. Hatch, United States senator from New Mexico, told the Commission that proper conservation laws in each state are essential if they are to retain control. Hatch is a member of the sub-committee recently appointed to study development of the mineral resources of the west. This committee is headed by Senator O'Mahoney of Wyoming. Hatch is likewise chairman of the Senate committee on public lands.

Hatch pointed out that many now hold the view that public lands are to be held for the profit of the federal government. This, he said, had not been the policy in the past.

"It has never been the policy of the federal government to own or acquire lands within the states," Hatch said. "The purpose has been to acquire only those lands which the government actually intended to use.

"The purpose of the old agricultural act was to put the public lands into private hands, the hands of the people who would use them for homes. Mining claims were handled in the same way," he said, "and the attitude of the government toward the operators has been generous.

"This was the attitude when the original oil leasing act was passed, and if your criticism of the Department of the Interior are just, then the rules and regulations of that department are in direct opposition to the intent of the law. But I do not say that your criticisms are just."

"You should have a program," Hatch continued, "wherein the activities of the state and federal governments are coordinated, and in which you cooperate with each other. Neither should attempt to encroach on the field belonging to the other.

Fixed Royalty Favored

"The federal government should require oil operators to pay a definite royalty, and it should abandon the sliding scale plan. I have attempted to get the Department of the Interior to abandon this plan. It was this effort which led to the act providing for fixed royalties for the duration of the war. This act should be made permanent," Hatch declared.

"But the states should do more in the field of conservation. There have been wasteful practices in the past, yet the states have the greatest interest in conservation; there is no conflict between the federal and state governments here. But every state should have a conservation law which demonstrates that no federal statute is needed.

"Where there is no state law, then it becomes the duty of the federal government to effect conservation.

"What we should do to assure the development of the public domain is to rewrite the conservation laws. The officials of the various states and the officials of the Interstate Oil Compact should help in working out details."

Industry complaints about bureaucrats, he believes, are not always just; frequently the bureaucrat is the administrator of a vague statute. Thus if the states would overhaul their legislation and clarify the law, there would be left room for no misunderstanding by administrators.

Congressman Fernandez of New Mexico, member of a subcommittee of the House committee on public lands, endorsed the statements by Hatch, said his subcommittee plans to come to New Mexico shortly to hear complaints concerning leasing of the public domain.

Governor Lester Hunt of Wyoming, said he expects his state to join the Compact soon. He said that the major companies favor the plan, which is opposed by smaller operators.

Pierre La Fleiche, state mineral supervisor for Wyoming, raised the question concerning the controversy over the sliding scale royalty.

"We have heard," La Fleiche said,

District 3 Production Ability

■ CONTINUED FROM PAGE 28

barrels and District 6 (East Texas) increased 4379 barrels. New Mexico has been increased by 7460 barrels, Mississippi 3728 barrels, and South Louisiana less than 3000 barrels.

Principal decreases came in Arkansas, North Louisiana, and Texas Panhandle where settled production was not offset by discoveries of new oil.

Table 2 is a comparison showing the number of fields placed in various classifications by the committee on December 1 and July 1. It shows an increase of 2215 producing wells to account for the 23,311-barrel increase in producing ability, or only 10½ barrels per well per day. A considerable increase is seen in the number of fields in process of development and given tentative rates—49 more than in December; 103 more fields have been given definite increases for each new well completed; 5 less fields are producing at inefficient rates; 41 more fields are now producing at capacity.

One hundred more pools were studied than were considered in December, partly due to the fact that many separate producing horizons in multiple-zone fields are now being considered separately where formerly grouped under one field designation.

In Table 3 are listed those fields in which committee determination has been changed more than 250 barrels upward or downward since December 1. In District 4 of Southwest Texas it will be noted that three zones of the Seeligson field have been boosted a total of 8125 barrels and 3 other zones not previously carried have combined availability of 550 barrels, or a total of 8675 barrels increase for Seeligson, largest for any single area. Mississippi shows that its increased availability is due to the Cranfield and Heidelberg discoveries plus development at Eucutta and Pickens-Sharpsburg.

An interesting, and perhaps surprising, feature of the West Texas group is a substantial reduction in estimated maximum efficient producing rate of a number of fields, including North Cowden, South Cowden, Goldsmith, Jordan, and others; while Foster, Fullerton, Henderson, Keystone Ellenburger, and Yates have been revised upward. North Cowden was reduced 6000 barrels to 35,000 barrels daily, Goldsmith is down 5000 to 25,000 barrels, and Jordan was cut 3500 to 7500 barrels. Among increases Yates was boosted 5000 barrels to a new figure of 50,000 barrels, Foster is up 4560 barrels, Fullerton up 4475 barrels, Henderson up 4000 barrels, and Keystone Ellenburger up 2150 barrels.

At the time this revised report was issued, John S. Ivy, chairman of the subcommittee, stated:

"In arriving at the present conclusions, neither the types of crudes necessary for the war effort, nor the adequacy of field tankage and pipe-line capacities that would necessarily be involved in making the volume indicated available for refinery utilization, have been considered.

"The committee determinations herein set out represent average rates, or sustainable rates for the six-month period ending December 31, 1944. Subsequent considerations will necessitate revisions of the present report as additional data concerning completions, abandonments, and reservoir performance are obtained.

"This study has been made without regard to method of allocation within fields or reservoirs."

Ivy has indicated that the committee considers this the best report prepared to date, since increased and fuller cooperation by operators has made available more information, making possible a closer study of all pertinent conditions.

In addition to John S. Ivy, chairman, other members of the committee are: D. V. Carter, Perry Olcott, Alexander Deussen, H. B. Fuqua, E. P. Hayes, and A. L. Selig.

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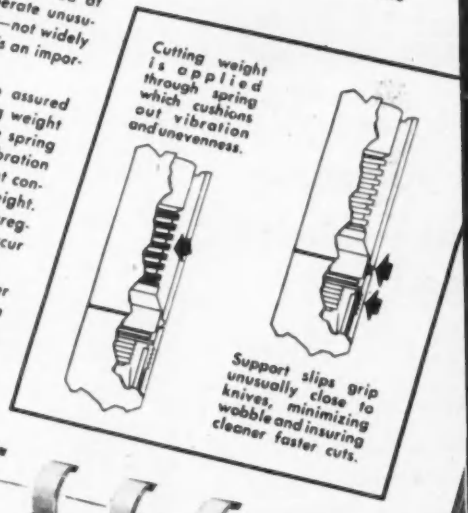
Cutting weight is applied through spring which cushions out vibration and unevenness.
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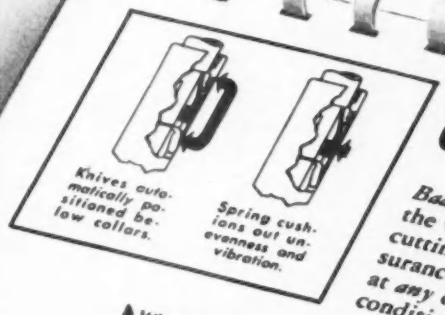

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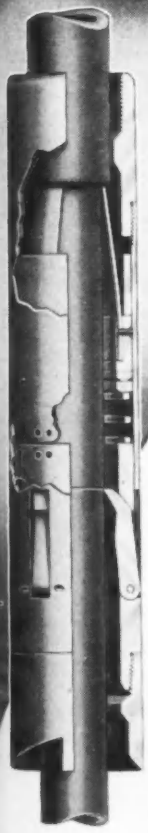

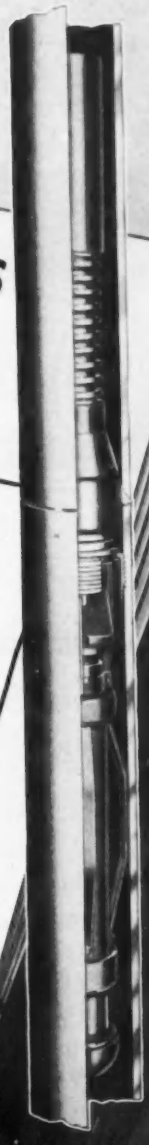

The brief facts cited above are only a few of many unique features incorporated in Baash-Ross Cutters. But they serve to show why Baash-Ross Tools are recognized throughout the world for their efficiency, safety and rugged dependability. No matter what your fishing job, call Baash-Ross! (Baash-Ross Cutters are leased in U. S. A. . . Sold for export only.)

"that excessive government royalties have hindered development, but when it is revealed that a 50-percent royalty is offered for a concession in far away Persian oil fields, we naturally parry this statement."

Representatives to Compact Commission were encouraged by the announcement that PAW had relaxed some of its regulations, leaving greater control to the states. However, the group as a whole, doubts whether Secretary Ickes voluntarily will ever relinquish his hold on the oil industry. In some quarters the opinion was expressed that recent changes were due largely to the political pressure resulting from the coming elections, rather than from any desire on the part of the department to disband at the end of the war.

E. A. Dahlgren was named acting secretary to succeed Charles Orr, who has served in the capacity of secretary for several years. It is possible that no permanent secretary will be named until the Compact is a little better oriented.

The executive committee heard several suggestions concerning the course the Compact should pursue. Most of the delegates indicated that they thought the group should be more active in the interim between meetings. A series of committes was suggested, each with a particular task, so that the work would be completed and reports ready for the regular meeting.

One committee would be appointed to assist in promoting legislation in Congress. To this group would be assigned such problems as that arising from the administration of public lands, or the intervention of the federal authorities in the state conservation programs.

Another committee would be charged with the duty of urging other states to join. Major B. A. Hardy of Louisiana reported that with the help of the Compact, a recent effort to pass a conservation law in Mississippi might not have failed.

J. C. Hunter, Texas representative to the Compact, suggested that short talks by various prominent oil men and officials might be made in the form of movie shorts, so that they would be used wherever any educational program was in progress in the event the men themselves could not attend.

While no positive action was taken concerning any of these proposals, it is probable that they will take some concrete form at the fall meeting.

Manpower Situation in California Is Critical

Although 1944 will record the greatest drilling activity in California history, even higher peaks would be made except for a breakdown in manpower supply. Shortage of personnel has reached a most critical stage. Instances of operations having to suspend are common. Operators with urgent drilling obligations often are unable even to make a start. New contracts are going begging.

As field development and exploration work increased this year, with consequent drain upon available workers, inroads upon the same supply by draft and shift to other industries made exhaustion of the pool swift and complete. The situation now, with demand for skilled well workers the greatest ever experienced, has reached a breaking point.

California started July with 400 active projects, 344 actually drilling and 66 rigged ready to start. Considering July of 1941 as a period of normal, or average, activity, the record for that month was 238 active projects.

The outlook becomes the more foreboding now that there is to be launched the 300-well program recently ordered for Elk Hills Naval Reserve. Fifteen strings of tools are to be started as quickly as possible, and there is much speculation as to where men can be recruited even to make up skeleton crews for so many additional projects without taking them away from other operations.

Perry Denver Refinery Now Owned by Skelly

Skelly Oil Company has purchased Perry Petroleum Company of Denver, Colorado, thereby acquiring control of that company's 1500-barrel cracking and skimming plant north of Denver. The refinery operates on oil from Wyoming and Colorado, and brought to the plant through the Rocky Mountain Pipe Line Company.

Perry Petroleum Company is now a wholly-owned subsidiary with W. G. Skelly, president; J. W. Vaiden and Joe D. Powell, vice presidents; F. T. Hopp, vice president and treasurer; W. R. Means, secretary; C. F. Russell, assistant treasurer. Directors include F. L. Perry, former president of Perry Petroleum Company; R. L. Dillenbeck and R. F. Eielsticker.

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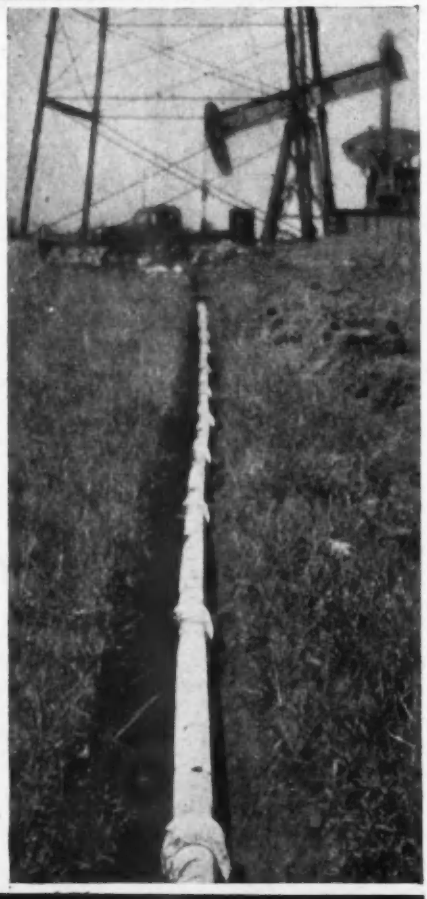

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Industry Draws on Stocks Despite High Current Output in Supplying Oil Needs

Producers and refiners of the United States continued to maintain operations at extremely high levels in the week ended July 1, but enormous demand for oils exceeded current supply, and it was necessary to draw further on too-low stocks.

Requirements apparently are greater than generally anticipated, because of war developments, virtual capacity-use is being made of refining facilities, in all-out efforts to meet the need for products. So great are the refinery runs that it has been necessary for a month to draw heavily on crude stocks besides maintaining domestic crude production at or near all-time peaks. In the 3 weeks from June 3 to June 24 the industry drew on crude stocks by the great amount of 245,000 barrels daily average, cutting them from 234,476,000 to 229,332,000 barrels, lowest level since October, 1939, when Mid-Continent fields were shut in for two weeks. The new total almost coincided with that of the latter date, which was the lowest since October, 1922.

Crude production was increased to another new high of 4,587,000 barrels daily in the week ended July 1, up to 4000 from the week before, and 579,000 daily or 14.4 percent above the 4,008,000 daily of the week ended July 3 last year.

Crude runs to stills were unchanged from the previous week at 4,638,000 barrels daily, representing 94.5 percent of rated capacity of U. S. refineries. The runs were 746,000 barrels daily or 19.2 percent above those of 3,892,000 daily in the week ended July 3 last year.

In spite of near-record refinery throughput of crude in the week of July 1, there was a heavy draft on gasoline stocks and a large withdrawal of residual fuel oil from storage, although seasonal building up of distillate fuel oil stocks proceeded.

Production of gasoline, including natural blended at refineries, held slightly above 2,000,000 barrels daily, although down very slightly from the previous week, and was 440,000 daily or 26.7 percent larger than in the corresponding week last year. But current demand was very great, and stocks of finished and unfinished gasoline were reduced by 349,000 barrels daily, a rate of withdrawal above normal and indicating heavy military takings. Those inventories declined from 86,000,000 to 83,559,000 barrels, and the latter amount only 6,374,000 barrels or 7.6 percent more than the 77,185,000 barrels reported on July 3 last year.

Exceptionally large production of gas oil and distillate fuel averaged 644,000 barrels daily and was 40,000 a day higher than in the previous week and 134,000 daily or 26.4 percent larger than output in the week of July 3 last year. Stocks of these light fuel oils seasonally increased by 147,000 barrels daily to 35,360,000 barrels, nearly 3,000,000 barrels or 9 percent more than the 32,546,000 barrels reported July 3, 1943.

Residual fuel oil production was off 13,000 barrels daily from the previous week in averaging 1,267,000 daily, but was 156,000 daily or 14 percent higher than in the corresponding week last year. Stocks of residual were drawn upon by 74,000 barrels daily and declined to 52,235,000 barrels, canceling a part of recent limited accumulation. This total was 13,331,000 barrels or 20.3 percent less than the 65,566,000 barrels on hand July 3 last year.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.
(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[1]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	49,861	11–14	95,857	1– 3
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	46,187	11–27	72,881	1– 2
1944	[1]4,587	7– 1	[1]4,752	6–17	240,992	1– 1	89,162	4– 1	42,310	1– 1	57,330	1– 1
Lows:												
1939	[2]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 8
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,381	4–12	90,914	7–12
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–13	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	229,332	6–24	76,302	1– 1	30,232	4–29	49,737	3–18

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,420	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,938
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,420	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,659
October 30	4,383	4,176	237,219	12,813	69,297	4,642	44,591	7,968	63,833
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,462	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
June 3	4,523	4,620	234,476	13,680	87,084	4,890	32,586	9,157	50,283
June 10	4,523	4,670	231,290	14,220	86,911	4,996	33,669	9,008	51,221
June 17	4,568	[1]4,752	230,565	14,398	85,268	4,870	34,137	9,489	52,017
June 24	4,583	4,638	229,332	14,066	86,000	4,337	34,328	8,961	52,757
July 1, 1944	[1]4,587	4,638	.....	14,052	83,559	4,496	35,360	8,872	52,235
July 3, 1943	4,008	3,892	[4]242,657	11,089	77,185	3,556	32,546	7,781	65,566
Change:									
In week	+4	0	—1,233	—14	—2,441	+159	+1,032	—89	—522
In year	+579	+746	—13,325	+2,963	+6,374	+940	+2,904	+1,091	—13,331
In year	+14.4%	+19.2%	—5.5%	+26.7%	+7.6%	+26.4%	+8.9%	+14.0%	—20.3%

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Stocks, June 26, 1943.

West Edmond Operators to Make Up Under-production

Operators in the West Edmond pool of Oklahoma and Canadian counties will be permitted to make up their cancellable under-production during the current period by applying to the conservation department of the Oklahoma State Corporation Commission, according to an announcement by Walker T. Pound, conservation officer. Under-production for the current period is estimated at 31,628 barrels.

Amerada Asks Permission To Water-Flood Stroud

Amerada Petroleum Corporation is seeking permission to undertake water flooding operations in the Stroud pool of Lincoln and Creek Counties and the Oklahoma State Corporation Commission has fixed July 14 for a hearing. Amerada has five producers in the pool pumping 144 barrels of oil and 373 barrels of water daily.

Pipe Line Review

Lack of Tank Cars Holds Up Movement to Pacific

Scheduled movement of a minimum of 30,000 barrels of West Texas crude oil daily by tank cars to refineries in the Los Angeles district this month has been deferred due to an inadequate supply of tank cars. Production allowables of fields in Andrews, Ector, Gaines and Crane Counties were raised July 1 on directive from PAW to provide 14,000 barrels daily from field runs, while the remainder was to be withdrawn from stocks held by oil purchasers within the area. It is reported that this supplemental supply of oil for the West Coast will begin as soon as designated tank cars are relieved from more urgent shipments.

West Texas Crude Going To Refineries in East

West Texas Ordovician crudes that yield essential military products are being shipped by tank cars to Atlantic Coast refineries at the rate of 4100 barrels daily. Magnolia Pipe Line Company is supplying 1400 barrels daily from its current runs from the Abell field, Pecos County, and 1000 barrels daily from Walton and Keystone Deep areas, Winkler County. This oil is consigned to the Paulsboro, New Jersey, plant of Socony-Vacuum Oil Company. Atlantic Pipe Line Company is supplying 1700 barrels daily from the Apco-Warner field, Pecos County, to The Atlantic Refining Company's refinery at Philadelphia.

Additional West Edmond Lines Are Denied by PAW

Application by seven oil companies to construct additional pipe lines from the West Edmond pool of Oklahoma and Canadian Counties, has been denied by PAW, District 2, officials declaring that Cimarron Valley Pipe Line Company now serving the field has ample capacity to handle present and future production. The Cimarron line is controlled by Champlain Refining Company and Peppers Refining Company and is a private carrier.

Center Point Pool Line To Connect with Shawnee

Oklahoma Natural Gas Company has completed 34 miles of 12-inch line from 6 miles north of Holdenville to the Citra and Luling gas fields, and has started laying 7 miles of 6-inch from Center Point pool, Pottowatomie County, to connect with its distributing system in the Shawnee gas area.

Bayou Pipe Line System Sets New Record for June

A new delivery record was set for the month of June by the Bayou Pipe Line System which pumped a daily average of 64,156 barrels of products from the Houston-Texas City and Beaumont-Port Arthur, Texas, areas into the Plantation Pipe Line terminal at Baton Rouge, Louisiana. Since the line started operation February 15, 1943, it has delivered more than 28 million barrels of products, and despite the fact that it is constructed of second-hand pipe, it has experienced a shrinkage and evaporation loss of only 0.238 percent.

The line is a privately financed joint-ownership venture of Humble Pipe Line Company, The Texas Pipe Line Company, Shell Pipe Line Corporation, Pan-American Pipe Line Company, Pure Transportation Company, and Crown Central Pipe Line Company. Each of the six owners handles its own business with shippers through the line although Shell operates the system.

Phillips Tying in Plant With Hobbs-Borger Line

Phillips Petroleum Company is building a 5-mile 3-inch welded gasoline line from the company's gasoline plant in the Fullerton field, largest sweet oil producing area in West Texas, to tie into its 8-inch gasoline trunk line from Hobbs, New Mexico, to Borger, Texas.

Line Proposed to Move Oil from Colorado Pool

Utah Oil Refining Company has filed application with PAW for laying 100 miles of 6-inch line from the Iles pool, southwest of Craig, Colorado, to Wamsutter in Sweetwater County, Wyoming connecting with its Fort Laramie-Salt Lake City line. The outlet is designed to relieve congestion on railroads handling Iles oil which is now being moved by a short line to Craig and there loaded on tank cars.

Ten Miles Daily Being Finished on Big Gas Line

Tennessee Gas & Transmission Company reports steady progress on its 24-inch gas line from the Corpus Christi, Texas area to West Virginia with completion averaging 10 miles per day. Laying of pipe is scheduled to be finished by October 1, when testing will begin.

Line to Link Todd Pool With Ozona Pump Station

Texas-New Mexico Pipe Line Company has received approval of its proposed 16½ miles of 6-inch oil line from the Todd pool in Crockett County, Texas to its pump station at Ozona. Contract will be let and work started within the next 30 days.

Willamar Line Progress

Pan American Pipe Line Company's 34-miles of 8-inch welded crude oil pipe line from the Willamar field to Port Isabel is scheduled for completion August 5.

International Developments

German Oil Technicians Reported Busy in Turkey

The British Ministry of Economic Warfare has issued a statement revealing that at the time of the outbreak of war there were 14 German geologists and geophysicists conducting petroleum explorations in Turkey, and that at least two are still carrying on studies there. Drilling has been done in the Adana and Ramandag districts, but no commercial production has been obtained, according to British sources. It is not believed that German companies actually hold any oil concessions in Turkey, although they appear to be still participating in exploratory enterprises.

Development Postponed In Ecuador and Peru

Programs of further exploration and development in the coastal strip of Ecuador and Peru have been temporarily postponed because of difficulty in obtaining necessary equipment, and also because of the uncertainties of the present political situations in the two countries.

Chinese Crude Reported Low in Gasoline Content

Further information regarding the oil field opened several months ago at Miaoerhkow, in western Szechwan province, China, indicates that production comes from a shallow Jurassic sand; and that while the oil is of comparatively high gravity and low in sulphur, it yields only about 2 percent gasoline by straight-run refining. The field promises to be of considerable size, according to Chungking sources, but greater development of the area is being postponed until arrangements can be made either for transporting the oil out of the district or for construction of a cracking still to provide badly-needed gasoline for motor-transport requirements in Northwest China.

Studies of Sumatra and Java in July Quarterly

"Miocene Foraminifera from Sumatra and Java" by Dr. L. W. LeRoy, instructor in geology at the Colorado School of Mines is the title of an article appearing in the school's Quarterly dated July 1944. The studies supplement three papers by Dr. LeRoy dealing with the smaller Tertiary Foraminifera of the Netherlands East Indies which appeared in the January 1941 Quarterly. Copies of either number at $2 each may be had by addressing the school at Golden, Colorado.

Tamaulipas and Nuevo Leon Oil Exploration Under Way

Pepe Martinin, Mexican rancher, is reported to have organized a company to conduct exploration and development operations in northern Tamaulipas and Nuevo Leon. His company recently purchased three rotary rigs in Louisiana. First drilling locations have been made opposite the town of Roma, in Starr County, Texas, along the Roma field trend. Other locations have been made in the Rio Pesqueria valley not far from Monterrey, where attempts will be made to find gas fields to supply Monterrey requirements.

U. S. Field Operations

Illinois Basin

New Pool in Wayne and New Horizon in Edwards

A survey of activity in Illinois for the first six months indicates that drilling may exceed estimates for the year. This appears especially true inasmuch as drilling regulations have been relaxed and operations have been increasing.

A total of 842 wells were completed to July 1—including 542 producers, 4 gas wells and 314 dry. Wildcat tests drilled totaled 170 and 20 of them were productive, for approximately 11½ percent success. The successful wildcats included pool openers, extensions and new-pay horizons.

Most active pool in the state is Clay City which has had 72 oil wells completed and 15 dry holes in the six-month period. Second most active is Mt. Carmel, which had 37 producers, 1 gas well and 5 dry holes.

That activity is on the upswing was indicated by the fact that first reports last week totaled 53, of which 23 were wildcats. Twenty-six oil wells were completed for initial production of 3067 barrels of oil. Twenty-five holes were dry. One location was abandoned.

Edwards County: Superior Oil Company's Mussett 1, SE SW SW 1-3s-10e, was completed for discovery of a new horizon in the Albion pool. The well is producing 100 barrels of oil and 233 barrels of water daily from Bridgeport sand at 1871-1928 feet.

Wayne County: Washburn and Gibson's Amsbury 1, NE NE SE 9-1n-9e, wildcat north of Mt. Erie, is preparing to test McClosky lime saturation for a pool opener. The well made gas in 7 minutes and showed 2500 feet of oil in 1 hour during a drill-stem test at 3235-42 feet.

Richland County: Probably the best McClosky lime producer completed on the east side of the Illinois Basin during the week was Pure Oil Company's Martin 1, SW SE NE 24-3n-8e. It pumped on initial test, 818 barrels of oil in 24 hours after 5000 gallons of acid. Total depth is 3015 feet.

Jefferson County: The Texas Company may have a discovery at Kasban 1, SE SE NW 8-2s-1e, northeast of Woodlawn. Saturation was discovered below 1770 feet. Operators are still examining the well.

Jackson County: Magnolia Petroleum Company has abandoned Froemling-Reuscher 1, NW SE SW 17-7s-4w, wildcat northwest of Murphysboro. Total depth was 3582 feet.

Douglas County: Ohio Oil Company has staked several tentative locations for a wildcat on a block of more than 10,000 acres near the town of Tuscola. Exact site has not been determined but the test is scheduled to start within 30 days. It will be taken below the Trenton formation or to a possible depth of 6000 feet.

Kentucky

Sohio Production Company has a discovery at Rash Heirs 1, 24-0-25, in the southeastern part of Henderson County. The well showed 400 feet of oil during a 1-hour drill stem test of Tar Springs sand. Casing has been set for test of pay at 1710-27 feet, the latter figure total depth.

In Union County, Gulf Refining Company may have a pool opener at Rankin 1. Pay was found in the Waltersburg sand and some water showed at the bottom of the pay. The operators planned to drill to other formations and plug back later for test.

The new Western Kentucky area has had a total of 289 wells drilled during the first six months this year. Producers totaled 146, while three wells were completed as gassers and 140 as dry holes. Seventy-six wildcats were completed, 8 of them as discoveries. None of the discoveries was rated as outstanding. Greatest development was in the Uniontown pool, which had 44 wells completed and now has 30 active operations. The pool produces from five pays—Palestine, Watlersburg, Cypress, Tar Springs and McClosky.

Indiana

Indiana, like Kentucky, had 8 wildcats completed as discoveries during the first half of the year, with none of the success of any high importance. Twenty-eight wildcats were dry.

A total of 127 wells were drilled. Sixty-five were oil producers, 57 were dry and 5 were gas wells.

California

Standard's Goal Set at One Elk Hills Well Daily

Completion of a well every 24 hours is the goal Standard Oil Company of California has set for its program to develop 50,000 barrels daily new production from Elk Hills Naval Reserve. Returning from a survey trip with Navy and other government officials, H. D. Collier, president of the company, said Navy engineers and Seabees had prepared sites and that 10 wells will be drilling within three weeks. The number is gradually to be increased to 15 rigs, the whole program calling for 300 wells.

Wildcat statistics again were unfavorable last week, the 12 failures and no new discoveries reported closing a record for June that is heavily on the debit side. Four wildcat starts announced are not in areas presently attracting special attention, and all are expected to be relatively shallow holes.

Imperial County: Both the pioneer wildcats in the big new Imperial Valley play are progressing towards objective depths with nothing so far found to give encouragement. Standard Oil Company's Southern Land 1, 26-10-9, was last reported at 4335 feet, and Pure Oil Company's Truckhaven Unit 1, 29-3-13, at 5410 feet, both drilling. Several

Wells Completed in the United States in Week Ended July 8, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	1	14	1
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	3	....
Arkansas	5	....	....	....	5	....	1	....	1	2	7	4	103	136
California	27	....	....	....	27	1	....	....	12	12	40	45	1,052	698
Colorado	....	....	....	....	....	....	....	....	....	....	....	1	12	10
Florida	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Illinois	30	....	....	4	34	....	1	....	10	11	45	40	847	882
Indiana	1	1	....	1	3	....	1	....	2	3	6	1	136	128
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Kansas	25	1	1	11	38	....	....	....	10	10	48	29	887	814
Kentucky	9	....	....	3	12	....	....	....	1	1	13	13	340	153
Louisiana	7	....	....	3	10	....	....	....	1	1	11	19	370	311
North Louisiana	....	....	....	....	....	....	....	....	....	....	....	12	120	137
South Louisiana	7	....	....	3	10	....	....	....	1	1	11	7	250	174
Michigan	4	3	....	1	8	....	....	....	2	2	10	10	318	255
Mississippi	1	....	....	....	1	....	....	....	1	1	2	5	73	44
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	9	12
Montana	....	....	....	....	....	....	....	....	....	....	....	9	153	111
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	7	26
New Mexico	3	....	....	2	5	....	1	....	3	4	9	13	219	128
New York	15	....	10	....	25	....	....	....	....	....	25	25	663	591
Ohio	1	....	....	2	3	....	....	....	....	....	3	11	346	438
Oklahoma	12	1	....	8	21	....	....	....	....	....	21	34	873	664
Pennsylvania	27	9	15	....	51	....	....	....	....	....	51	44	1,430	1,265
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	6	5
Texas	55	4	....	23	82	2	4	3	21	28	112	135	3,059	1,972
E.Tex.Bor. Co.'s	....	....	....	....	....	....	....	....	....	....	....	2	12	14
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	3	5
Rest of E. Texas	2	1	....	2	5	....	....	....	1	1	6	4	153	114
North Texas	9	....	....	7	16	....	1	....	3	4	20	27	705	455
W. Central Tex.	2	....	....	2	4	....	....	....	3	3	7	11	206	168
West Texas	20	1	....	1	22	2	1	....	3	4	28	36	813	447
Tex. Panhandle	3	....	....	2	5	....	....	....	....	....	5	8	119	107
G. Coast, Upper	6	....	....	5	11	....	2	....	6	8	19	17	294	148
G. Coast, Lower	7	....	....	2	9	....	....	2	3	5	14	20	467	300
Southwest Texas	6	2	....	1	9	....	....	1	1	2	11	8	235	181
S. Central Tex.	....	....	....	1	1	....	....	....	1	1	2	2	52	33
West Virginia	....	14	....	....	14	....	....	....	....	....	14	15	470	298
Wyoming	....	....	....	....	....	....	....	....	....	....	....	2	79	61
Total U. S.	222	33	26	58	339	3	8	3	64	75	417	456	11,473	9,108

* Includes distillate wells. † Includes salt water disposal wells.

formation tests have been made in each, all with negative results. Location for a third wildcat, announced last week by O'Quinn & Hadley, is in 11-9-12, Salton Sea area. Despite unpromising indications of early drilling, aggressive leasing continues, with hundreds of thousands of acres already blocked up.

Kern County: After stopping for a formation test of showings just above 8862 feet that yielded only fresh water, Richfield Oil Corporation's wildcat in the Old River area is drilling at 8900 feet.

Los Angeles County: In the Turnbull Canyon area, Capital Company's test of its first try there for shallow oil production, Cole 1, 11-2-11, bailed clean oil from 165 feet of formation bottomed at 2000 feet. In Baldwin 2, a second well in the same section, oil sand was cored at 490 feet. Pipe has been set at 1109 feet, preparatory to a production test.

A half mile north of Aliso Canyon field production limits, Standard Oil Company is drilling a test in which equivalents of both the upper Aliso producing formation, the Porter, and the lower, the Sesnon, will be sought.

Its Loma Verde area wildcat, bottomed at 7006 feet having been abandoned after drilling revealed extremely steep dips, Shell Oil Company has moved its exploratory activities in this district to Hasley Canyon. Location for a test is being readied in SE SE SE 4-4-17.

Orange County: Based mainly upon fault accumulation prospects, several areas adjacent to production in the old Seal Beach field are to be explored during coming weeks. Standard Oil Company is drilling along the northwest-southeast fault, and to the southeast Shell Oil Company is starting a new test. Still further out in that direction, Hellman Estates is moving in materials for a wildcat, and Capital Company has announced a test on its newly acquired McGrath lease.

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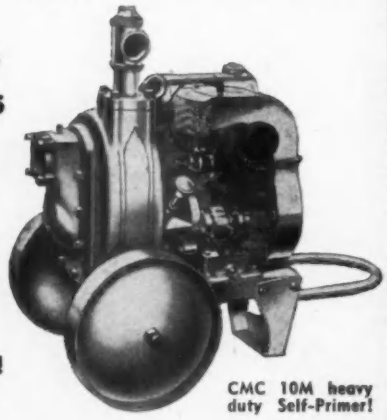

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Oklahoma

West Edmond Extended Three Miles North

Phillips Petroleum Company's Cavin 1, C NE NW 32-15n-4w, has extended the West Edmond pool three miles north into Logan County. The well is rated on initial test at 1000 barrels daily from the Hunton. Drilled tight, the company has not released tops or completion data but total depth is understood to be of 7023 feet. Meanwhile Anderson-Prichard Oil Corporation extended the pool ¾ mile southeast with Crookham 1-A, C NW SE 9-13n-4w, Oklahoma County, for 600 barrels of oil in 4 hours through tubing choke. Pipe was set at 6942 feet and perforated at 6865-6910 feet.

Phillips Petroleum Company has staked 12 locations in the West Edmond pool, the wells to be drilled in Sections 6 and 16-14n-4w. Phillips' Gomer 1, SWc NW 16-14n-4w, which extended the pool a mile northeast after coring 70 feet of saturated Bois D'Arc (Hunton) section, on initial test flowed 25 barrels an hour. Perforations were at 6660-6730 feet. The well will be acidized.

Fox & Fox's Peterson 2, SE SW 19-14n-4w, flowed 780 barrels in five hours from 6863-6933 feet and has been pinched back to 200 barrels daily, and Stanolind Oil & Gas Company's Briscoe 1, NW SW 20-14n-4w, after 136 shots between 6793-6861 feet and acidizing with 1000 gallons, flowed 140 barrels an hour in the first hour through 1-inch tubing choke.

The pool chalked up another failure when Sohio Oil Company abandoned Baker 1, SE NE 29-14n-4w, after electrolog was run to 6796 feet. Total depth is 6802 feet with dry Bois D'Arc logged at 6768-82 feet.

Cleveland County: Mid-Continent Petroleum Corporation's strike in the new South Moore pool has started a heavy lease play with Barnsdall Oil Company reportedly buying 116 acres out of the southeast quarter of 27-10n-3w, and 95 acres out of the southwest quarter of 25-10n-3w. Five locations in the new pool have been staked by Mid-Continent in Sections 20-26-26 and 32-10n-3w.

Garvin County: Ohio Oil Company is extending Pauls Valley flank oil production one half mile to the north as Mueller 1, NE SW NW 17-3n-2e, recovered 30-40 barrels an hour on drill stem test at 2920-40 feet. Pipe was set at 3060 feet. The test is north of Ohio's Burns 1 in SE NE SW 17-3n-2e, and north of its McKinney 1 in 18-3n-2e, which opened flank oil production in the hitherto gas producing area.

Grady County: Two and one-half miles north of the Chicakasha gas pool, Skelly Oil Company's Godwin 1, wildcat in the SE SW 3-5n-8w, looks like a pool opener. Drilled out to 10,402 feet the test made two heads of fluid estimated at 100 barrels of which 10 percent

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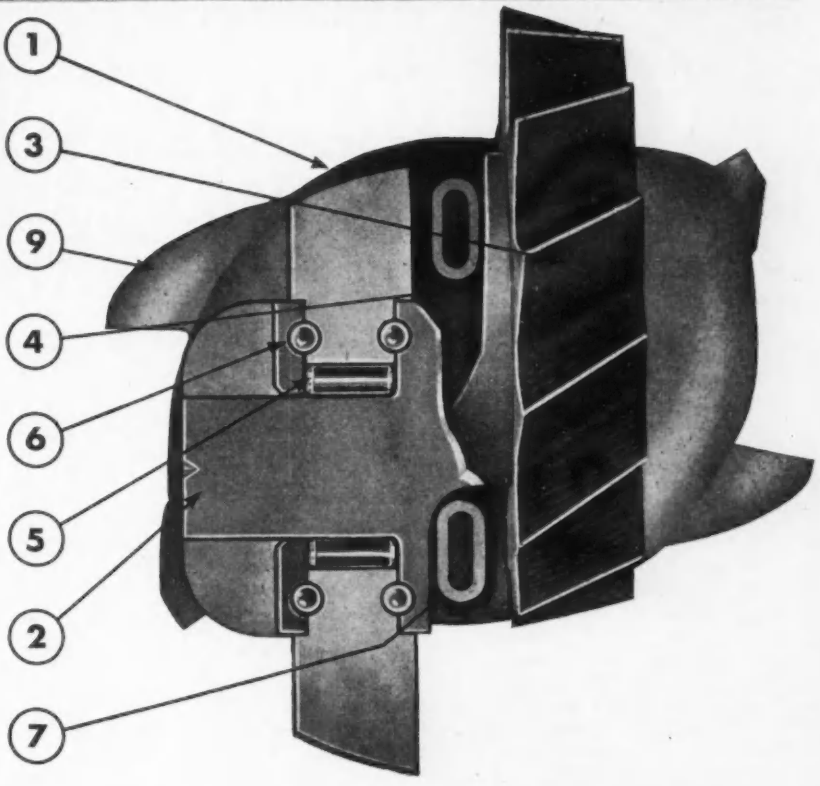

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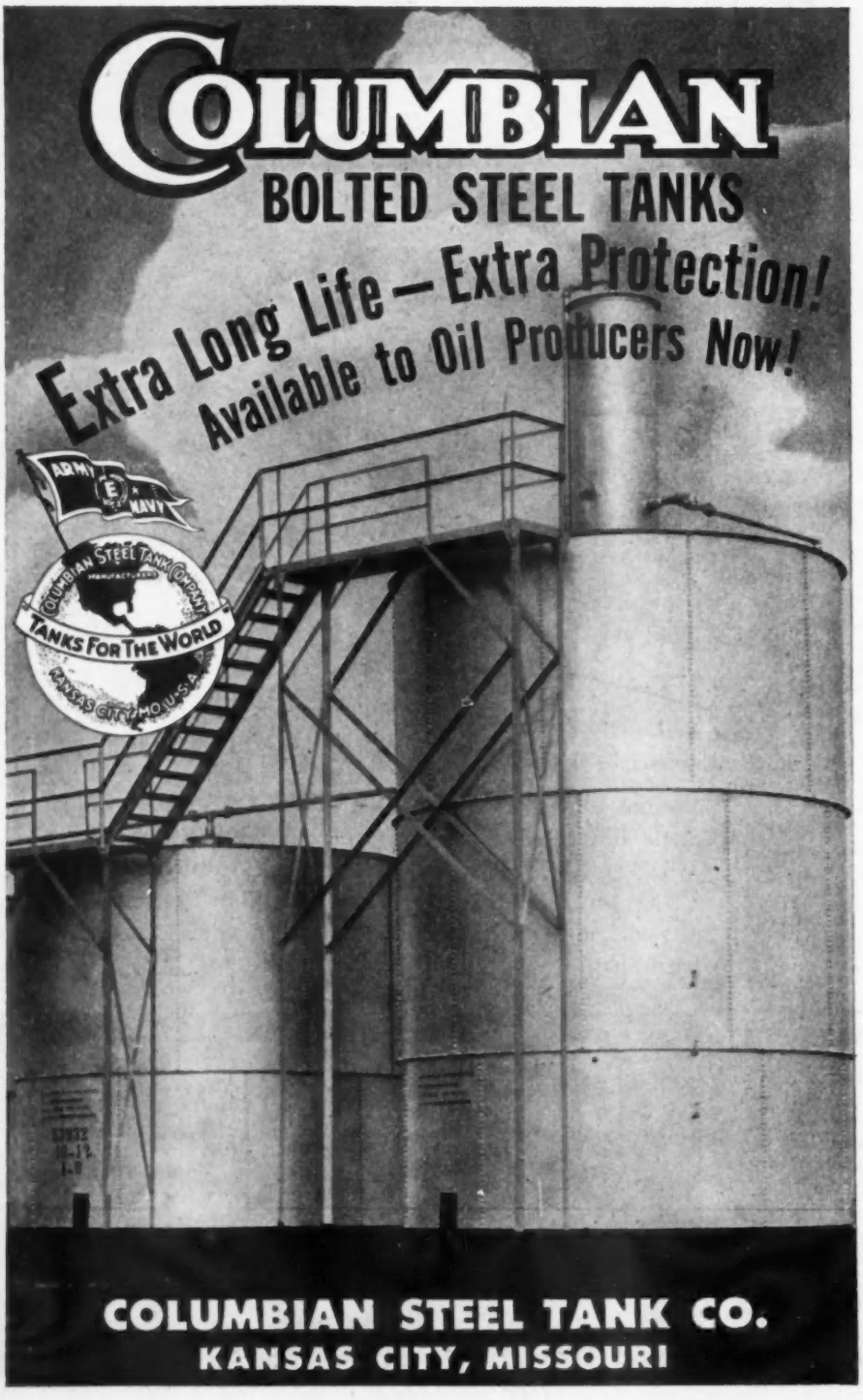
was oil. It was shut in for 16 hours and when re-opened made 30 barrels of fluid, 10 percent oil, in 30 minutes. Testing continues.

Washita County: Gulf Oil Corporation will re-perforate Hare 1, SE NE SW 8-8n-20w, in the new Granite Wash zone pool. Originally perforated with 87 shots at 5900-30 feet, the test swabbed and flowed approximately 125 barrels of oil and 140 barrels of water plus a million feet of gas in 24 hours. After running tubing to 5570 feet 62 barrels of oil and 15 barrels of water were recovered in 11 hours plus 2 million feet of gas with 250 pounds tubing and 450 pounds casing pressure. In the following 24 hours the well flowed 120 barrels oil and 35 barrels water through tubing.

Carter County: Another producer for the shallow Lone Grove pool opened up by The Texas Company which has proved disappointing, appears assured as Merrick's Yell 1, NW SW SW tested 60 barrels of fluid, 50 percent oil, through tubing after perforating the Chubbee sand at 2407-11 feet on a 12-hour test. Pumping unit is being installed.

Beckham County: Northern Ordnance, Inc., is drilling below 6400 feet in Crawford 1, NE SE 25-9n-22w, after recovering 270 feet of salt water and a show of oil in the Granite Wash zone at 6285 feet. Oil show also was reported in core at 6146-53 feet.

Marshall County: Two miles northwest of the Kingston Community, The Texas Company has located Bounds 1, SE SW 23-6s-5e, as a deep test on a seismograph prospect. The wildcat is on a 3000-acre block.



Missouri

Cities Service Reports Atchison County Producer

The Tarkio pool of Atchison County has another producer with completion of Cities Service Oil Company's Watkins 2, NW SE NW 32-65n-39w, a 30-barrel-daily pumper in the Bartlesville sand. Six-inch pipe was set at 1391 feet and the well completed at 1394 feet. Cities Service's Watkins 3, NW SW NW 32-65n-39w, is preparing to test after topping oil sand at 1434 feet.

Caldwell County: Todd et al's Gotschall 1, SEc SE 28-55n-29w, is drilling at 1375 feet. Old total depth was 1364 feet. Plug was cemented and drilled at 1276 feet but the test recovered salt water.

Kansas

Dry Holes Give State Bad Exploration Week

Stanolind Oil & Gas Company extended the Penny-Wann pool of Ellis County two locations west as its Wann 1, SE SW SE 13-15s-20w, after coring eight feet of saturated sand filled up with oil when plug was drilled to 3644 feet in the basal sand.

Kiowa County: Vierson & Cochran's Butler 1, NE NW 22-27s-19w, is fishing for twisted pipe at 5060 feet after logging oil shows in cores at 4187-99 and 4236-40 feet. Drill stem test at 4188-4243 feet recovered 90 feet of oil and gas cut mud in 30 minutes. The wildcat is a 150-foot offset to operator's Butler 1, junked after the derrick was pulled in.

Ness County: Skelly Oil Company's Norton 1, NWc 23-17s-26w, pool opener 3½ miles northwest of the Aldrich field, is pumping 84 barrels of oil per day after acidizing with 2250 gallons at 4450-61 feet, total depth, in Mississippi lime.

Butler County: H. & M. Drilling Company's Pondexter 1, SE NW SE 11-27s-7e, in the Garden-Shaffer pool, has been completed for 200 barrels per day after acidizing in the Viola at 2996-98 feet.

Edwards County: Eight miles southeast of the McCarty pool, Stanolind Oil & Gas Company's Shultz 1, SE SE SW 10-26s-16w, a wildcat, is drilling below 4000 feet after topping the Lansing at 3920 feet. Cities Service Oil Company is testing Trousdale 1, SEc NE 18-25s-16w, closely watched wildcat southwest of Belpre. Testing is through casing perforations in the Lansing at 3842-48 feet with the well making considerable oil and some water. Plug has been set at 3855 feet in an effort to shut off water.

Kansas wildcat tests have been abandoned as follows:

Rooks County: Barnsdall Oil Company's Garoung 1, SEc SW 20-9s-17w, three miles southwest of the Westhusin pool, dry in the Arbuckle at 3698 feet, total depth.

Pratt County: Phillips Petroleum Company's Levick 1, SWc NW 29-28s-13w, eight miles southwest of the Iuka pool, abandoned at 4583 feet after testing sulphur water.

Rush County: Wolf Creek Oil Company's Carman 1, SE NW NE 25-16s-

25w, northeast of McCracken, dry at 3962 feet in Arbuckle topped at 3862 feet.

Stafford County: Magnolia Petroleum Company's Byer 1, SEc SW 5-24s-11w, west of the Zenith-Peace Creek area, abandoned at 3968 feet.

Sedgwick County: The Texas Company's Blackford 1, NEc 24-25s-2e, 3 miles northeast of the Greenwich pool, dry in Arbuckle at 3968 feet. The test topped the Mississippi lime at 2820 feet, Misener sand at 3196 feet, Simpson sand at 3272 feet and Arbuckle at 3347 feet.

Sumner County: The Texas Company's Craven 1, NEc NW 27-33s-2e, five miles south of the Oxford pool, topped Arbuckle lime at 3674 feet and at 3730 feet was abandoned.

Nebraska

Richardson County Gets Long-Waited Wildcat

Lee M. Bates and others are preparing to spud on Caverzagie 1, SE NE 13-3n-16e, Richardson County, 1½ miles northeast of Barada, in the center of a 2600-acre drilling block. The B. & T. Drilling Company of Falls City, Missouri, has moved its heavy portable rotary from the Tarkio pool for the job. This is the first wildcat test for Nebraska in more than six months.

Triangle Spacing Rule Adopted for Moore Area

A 20-acre triangular spacing program has been approved for the West Moore and South Moore pools of Cleveland County, Oklahoma, predicated on the development of two narrow strips, each about 53 acres, across the west line of Section 28-10n-3e, and due to the fact that unitization is not possible because of the unleased 532-acre Navy emergency airfield which comprises most of Section 28. Operators locating under the program include Mid-Continent Petroleum Corporation, discoverer of both deep areas, J. E. Crosbie, Inc., Margay Oil Corporation and Sinclair-Prairie Oil Company.

Names Are Assigned Four Oklahoma Pools

Four new pools in Oklahoma have been given names by the nomeclature committee of Mid-Continent Oil & Gas Association.

Arcadia Northeast is the discovery of Jordan Oil Company at Williams 1, SW SE SW 11-14n-1w, Oklahoma County; Hoover Northwest is the shallow pool opened by Helmerich & Payne, Inc.'s Freeman 1, CSE SE 14-1n-1e, Garvin County; Lone Grove Southwest is the pool discovered by The Texas Company's Chubbee 1, SE SW 5-5s-1w, Carter County; Morel Northeast is Stanolind Oil & Gas Company's discovery in Pottowatomie County opened by Werrell 1, NWc 9-7n-3e.

The Arcadia strike has revived interest in Eastern Oklahoma County and a drilling campaign is anticipated in the near future. The pool is believed to be at the northwest end of a trend worked out from near Shawnee northwest to near Jones in Oklahoma County.

West Texas

Means Extension West Revives Area Interest

Sun Oil Company's Gardner 1, C W½ NW NE PSL 17, Block A-35, extended the Means field 1¼ miles west in swabbing 3 to 4 barrels oil hourly from broken pay at 4430-4554 feet. This showing is comparable with wells in the field proper before given acid treatment or nitro shot, and will revive development of the 10-year-old field, which has comparatively few failures on the west side of the structure.

Expansion of the Fullerton field, Andrews County, 1 2/3 miles south by east of the most easterly production was confirmed when Frankel Bros.' University 1-D, C NW SE Section 3, Block 13, logged regular pay at 6845-85 feet, then prepared to set pipe. This outpost is surrounded by leases acquired at public auction at steep prices. British American Oil Producing Company's McCrea 1, C SE SW PSL 1, Block A-48, a mile southwest of production, resumed after landing 9-inch protection string at 2898 feet. This outpost topped the anhydrite at 1760 feet, or 60 feet low. Mid-Continent Petroleum Corporation's University 1-7, 1½ miles south of production and a failure in the Clear Fork, was drilling lime at 8380 feet with Ellenburger as its objective.

Gaines County: Stanolind Oil & Gas Company's Riley Estate 1, C SW NE D&W 79, Block H, 8 miles west by

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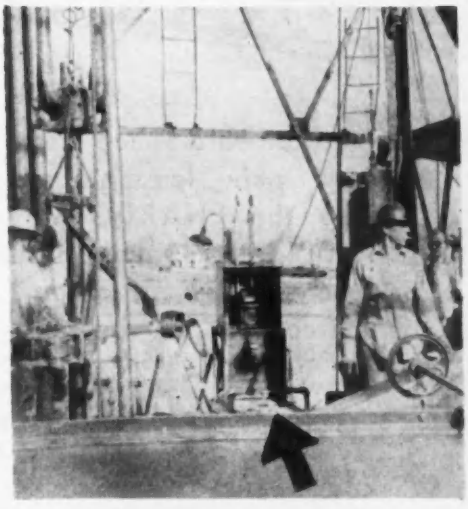

(Above) Geolograph in operation on a Danciger Rig drilling for William Helis, in the University Field, Baton Rouge, La.

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south of the Cedar Lake field, nearest production, swabbed salt water with a show of free oil after drilling plugs from 5½-inch at 5046 feet with hole bottomed at 5176 feet. Survey established split pipe as source of the water, and corrective measures are underway. This wildcat logged ample oil-saturated lime to make an important discovery.

Crockett County: Watchorn Oil & Gas Company's Thompson 1, northeast edge of the Yates field, tested sulphur water that could not be lowered below the 3000-foot level after drilling plugs from 7-inch pipe at 7380 feet and bottomed at 7640 feet. Top of Ellenburger was called at 7360 feet, and a small show of gas showed when tester was used at 7495-7640 feet. The hole will be plugged back for another test of the top section of Ellenburger. Deep failures have been drilled immediately east and southwest of the prolific shallow area, which has been rated as an outstanding deep prospect.

Pecos County: Standard Oil Company of Texas' Mac-Der 1, Lease 3, C SW SW H&GN 64, Block 11, and 3½ miles east by south of the Mac-Der pool's two 4700-foot gassers in the Wolfcamp, or basal Permian, was running pipe to try for gas completion after drill-stem test at 5059-5374 feet returned 20 stands of gas-cut mud with gas flow rated by owner at 5,000,000 feet daily. This wildcat entered the Wolfcamp at 4974 feet and detrital at 5258 feet with elevation of 3002 feet. It is bottomed in granite. No market is available for the gas, but such production has a tendency to maintain interest in what appears to be a large structure. Humble Oil & Refining Company's Williams 1, 7½ miles northwest of Fort Stockton, makes small flows of oil when agitated from Yates sand perforations at 2840-80 feet. This discovery indicated it is capable of flush production when tester was used at 2831-84 feet, and was carried to 3604 feet.

Winkler County: Stanolind Oil & Gas Company's Sealy-Smith 4, west offset to its Clear Fork discovery in the North Monahans field, recovered 300 feet of oil- and gas-cut mud when tester was used in upper pay at 6113-50 feet, and was drilling broken pay at 6243 feet. The company's Sealy-Smith 3, south offset to the producer, was drilling at 5819 feet, and Sealy-Smith 2, mile east outpost, was awaiting rig repairs at 6381 feet before deepening to establish water level. The Clear Fork pay section is subnormal, but is adequate to make a small well. In the face of this development, one of the three outposts listed for the company last week will be drilled to the southeast.

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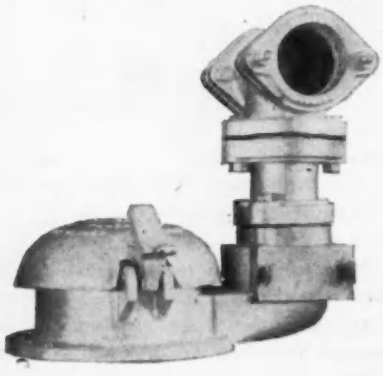

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Southwest Texas

Slick-Wilcox Field Is Extended to the South

Transwestern Oil Company's J. F. Wood 1, in the L. Von Roeder Survey, Goliad County, has extended production in the Slick-Wilcox field 1150 feet south, completing at total depth of 7667 feet with casing perforated in the Wilcox sand at 7635-40 feet, flowing at the rate of 9 barrels per hour through a 5/32-inch choke with tubing and casing pressures 1100 pounds. Ratio 837-1. Transwestern & Continental's Dr. G. W. Allen 2, is extending production on the east side of the field, completing through perforations just above casing seat of 7575 feet.

Producers together with Scurlock Pipe Line Company have applied for an increase in allowable from Slick-Wilcox field from the present 95 barrels to a top of 132 barrels per day per well. Applicants pointed to a gas section of 60 feet and maximum oil section of 55 feet, average oil sand thickness being about 35 feet, and stated that bottom hole pressures have dropped only 5 pounds from February, 1944, to June 13, 1944, now standing at 3295 pounds. There is a firm market, and pipe line facilities are adequate.

Karnes County: Magnolia Petroleum Company's Russell-Atkinson 2, second well for the Green field, has missed the sand and was abandoned after drilling to 6825 feet, in the Wilcox. The discovery well, 1798 feet to the east, was completed in sand topped at 6537 feet, and flowed 36.7-gravity oil at the rate of 69 barrels daily through a 9/64-inch choke, with no salt water. The second well made a drill stem test at 6620-24 feet, recovering salt water and mud with no oil and no pressure.

Victoria County: Kingwood Oil Company's Mrs. Addie Wilden 1, 2 miles southwest of Victoria, is setting liner for a test of sand below 4700 feet, after having failed to show in the shallower sands above 3000 feet. On being deepened to present depth of 4907 feet, sand was cored from 4779-84 feet showing odors of oil, and a drill stem test at 4778-84 feet recovered 900 feet of pipe-

line oil along with 360 feet of oil-cut mud. Gravity of the oil 24 degrees. Sand was cored to 4796, and liner set below the 5½-inch casing previously set. The sand is in the Vicksburg.

Nueces County: Cities Service Oil Company's Mattiza 1, wildcat west of Robstown, is drilling below 4000 feet in shale.

Hidalgo County: Seaboard Oil Company has made location for Boston-Texas Land Trust Company 3, wildcat 5 miles west of McCook, near the Starr County line. This well, contracted to a depth of 6500 feet, is 7000 feet northerly from the company's Boston-Texas Land Trust 1, dry hole on this same 22,500-acre block.

Ask That Rivers Estate Area Be Declared New Field

W. C. McBride, H. R. Smith, and Forest Development Corporation have asked the Texas Railroad Commission to declare the area surrounding Smith and McBride's Rivers Estate 1 well, Nueces County, a new field. This well, 3000 feet northeast of the nearest production on Sun Oil Company's Harlan lease producing from the Pflueger sands in the Agua Dulce field, was completed June 1, 1944, total depth 7419 feet. The producing sand, encountered at 7195 to 7238 feet, is not positively identified, but is thought to correlate with the Pflueger sand in the Agua Dulce field. Bottom-hole pressure in Pflueger sand production is 2950 pounds and in the Rivers well is 3225 pounds. The oils produced are almost identical in character except gravity. A discovery allowable of 160 barrels per day was asked. Operators also requested rules similar to those in operation in the Agua Dulce field, but that they be set up separately so that future amendments to the Agua Dulce rules would not affect this area.

Twenty-acre spacing with 40 acres assigned to each well for distribution of allowable with allowables assigned on the basis 25 percent per-well and 75 percent acreage were the primary recommendations.

Stanolind Oil & Gas Company concurred in the recommendations.

Permission was also asked to dually complete this well.

Change in Allocation Rule for Willamar Asked

Sun Oil Company has asked for a change in the Texas Railroad Commission rule fixing method of allocation in the Willamar Field, Willacy County. The rule now provides for distribution of allowable on acreage and per well, with 50 percent on each factor.

PAW has required the company to unitize small tracts in the field into blocks of approximately 40 acres. Some royalty owners with fairly large leases protested that under the plan in effect now, they would get less oil than owners of smaller tracts which comprised a unit smaller than the standard.

The company therefore, asked that straight-acreage proration be applied, as this was the method followed in dividing the royalty payments in the unitized blocks.

JOE G. SAUER, West Texas scout for the Cities Service Oil Company, Midland, has been promoted to district landman, succeeding John W. Glahn, who resigned to operate independently in Mississippi. Tom Potter, formerly with Baroid Well Logging Service, replaces Sauer as scout.

East Texas

Extremely High-Pressure Discovery in Smith County

Smith County portion of the East Texas Basin scored an extremely high-pressure discovery on July 4 when Phillips Petroleum Company's W. J. McMinn 1, Mary M. Long survey, and 6 miles south by west of Tyler flowed 95 barrels of 40-gravity brownish-green oil with gas oil ratio of 2250/1 on 12½-hour natural test through ⅛-inch tubing choke. Working pressure on tubing was 4600 pounds. The flow amounted to 182 barrels of oil on 24-hour test through the same size choke with working pressure on tubing rising to 4675 pounds and 500 pounds back pressure on the separator. The gas oil ratio likewise climbed to 4450/1.

Production is from Rodessa perforations at 9918-29 feet with the hole bottomed in Rodessa or lower Glen Rose at 10,011 feet. The company announced that Coquina lime pay section was logged between 9865-9960 feet affording a probable 65-foot net pay zone. The strike also passed up possible production of 35-gravity oil from the upper Glen Rose at 7972-80 feet that resulted in free oil appearing with rotary returns. Other prospective pay zones remaining to be explored are the Pettit and Travis Peak. The company has a block of 13,000 acres and has checked titles since drilling the well to its present depth late in March.

This discovery is 10½ miles west by south of the Chapel Hill gas-distillate, gas and oil field which produces from Paluxy, Rodessa and Pettit and is 12 miles south of the same flat field which produces oil from the Paluxy and with a pumper in the 9300-foot Rodessa the deepest basin production involves the Larissa one-well pool in northwestern Cherokee County.

Bowie County: Barnsdall Oil Company's Heilborn 2, M. J. Janes survey, and 800 feet west of the company's 7836-foot Smackover failure that yielded small amount of low gravity oil, promises to open the first Smackover lime production in Texas through having logged favorable saturation in broken lime at 7645-81 feet. A drill-stem test failed. The company plans to pull another core and set pipe for completion. This followup test is about 65 feet high, having gained structural position below the Travis Peak, topped at 5340 feet with elevation of 305 feet. The Cotton Valley was entered at 6269 feet.

Camp County: Magnolia Petroleum Company's Florence 1, north offset to the smallest of 12 wells in the Pittsburg field, recovered 100 feet of oil and 4000 feet of salt water when tester was used on Travis Peak sand perforations at 8012-34 and 8082-90 feet. This is the first water encountered in the pay section. Lower perforations will be sealed for further test of Florence 1. The area has 8 tests drilling, or in process of completion with derricks up for 3 more.

Cherokee County: Humble Oil & Refining Company's Stephens 1-B, ¾-mile northwest of its Larissa pool discovery, entered dry Travis Peak at 11,025-11,044 feet, by log, being about 550 feet low, and was drilling hard sand with streaks of shale at 11,175 feet. In view of the cost of this test, which is on a 903-acre unit, pipe will likely be run to try for a well at 10,819-10,865 feet. This zone yielded 45 feet of gas-cut mud and show of green oil.

Henderson County: Lone Star Producing Company's McElreath-Suggett 2-C, gas-distillate discovery in the Rodessa for the Opelika field, has given the area its first Travis Peak production in testing 30,000,000 feet of gas, averaging 55 barrels of distillate per million feet. Production is from Travis Peak sand from casing point at 9194 feet to 9351 feet, while perforations were also made in Pettit at 8845-8907 eet, but no gas is credited to the latter. The original owners drilled to 9320 feet, then plugged back for completion through perforations at 7910-50 feet. The latter perforations are being used for cycling dry gas.

Wildcats: Magnolia Petroleum Company's McGee 1, Western Wood County, was drilling at 7175 feet, having tested water in Paluxy, topped at 6385 feet. In Van Zandt County, The Texas Company's Easley 1, N. T. Dickerson Survey, resumed coring at 8604 feet after running electrical formation survey at this depth, while Humble Oil & Refining Company's Surratt 1, Edgewood prospect, was drilling shale-sand in Rodessa at 8403 feet. In Southern Hopkins County, Humble Oil & Refining Company's Nichols 1, Pickton area, resumed drilling after testing salt water in Woodbine at 4902-30 feet.

Manziel Field: Shell Oil Company and Sun Oil Company's Herring-Scoggins 1, southwest edge of Paluxy production, was drilling sandy-shale at 9017 feet to explore Travis Peak. Nominal shows passed up in 8400-foot Rodessa and 8700-foot Pettit may warrant running pipe for a test. Sun Oil Company's Johnson 1 was drilling shale at 7395 feet, having entered first Glen Rose at 6645 feet, about level with the field's 8400-foot pumping discovery that is awaitnig gauge.

Panola County: McAlester Fuel Oil Company's Hunt 1, Wyatt Anderson survey, 4 miles southeast of Carthage, has been closed in after running wild after a blowout as a wet-gasser around the 5150 level in the Hill zone of the Glen Rose series. Operators may complete the well from this zone.

Gas flow was estimated at 10,000,000 feet daily. Production from the Hill zone will open a new horizon in the Carthage area, where production has been from the upper and lower Pettit and the Travis Peak. The Hunt well is five miles from the nearest Carthage production.

Increased Allowable for Goliad County Field Asked

The Texas Railroad Commission last week heard the application of Scurlock Pipe Line Company and producers in the Slick-Wilcox field Goliad County, for an increase in allowable from 95 to 132 barrels daily. There are 28 producing wells, 2 wells in process of completion, and 3 other wells drilling in the field, which produces from the Carrizo-Wilcox formation at 7500-7600 feet.

Pipe-line facilities are ample to handle the increase in production. Scurlock Pipe Line Company gathers and purchases the oil and in turn sells it to Globe Crude Oil Purchasing Company which has asked for the additional oil.

North Texas

Second Deep Pay Well In Ross Field Swabbing Oil

Continental Oil Company et al's Williams 6, south edge of the Ross field, is the second producer for the area's new deep pay, having swabbed 5 barrels of oil hourly after using 6000 gallons of acid in Bend detrital pay at 5589-5639 feet. The detrital zone was entered at 5579 feet, or 8 feet high.

Continental Oil Company and Edge Oil Company's Crockett 1, prospective Ordovician strike for the Buffalo Springs area, bailed dry at 6817 feet after drilling plugs from 7-inch at 6750 feet in Ellenburger, topped at 6633 feet, and will make initial perforations at 6633-72 feet. Most promising pay-zone was logged in Simpson, topped at 6483 feet with elevation of 1081 feet.

Montague County: Magnolia Petroleum Company's Black 1, north and east offset to flowing producers in the east extension of the Dodson field tested 4200 feet of salt water from Bend conglomerate perforations at 5195-5204 eet and 5208-14 feet, and will be abandoned. Phillips Petroleum Company's Whaley 1, east outpost that missed the field's multiple pays, was fishing drill pipe at 6739 feet in Ellenburger topped at 5610 feet.

King County: Humble Oil & Refining Company's Bateman 4, offsetting 3600-foot production in the Bateman field, filled 350 feet with oil and rotary mud with a good show of gas after perforating pipe at 5325-60 feet. Swabbing test will follow. This deep prospect entered Cambrian at 6110 feet and Hickory sand at 6285 feet, followed by granite at 6380-88 feet. The company's Bateman 5 passed up prospective production in lime at 3652-62 feet and was drilling shale at 4790 feet. Gulf Oil Corporation's Masterson 1, E. L. Ribble survey, a 7500-foot Ellenburger prospect, was trying to recover lost drill pipe at 5710 feet.

Archer County: Consolidated Oil Company and Premier Oil Refining Company's Garrett 1-B, ½ mile southeast of their recent 3900-foot Strawn sand discovery for the Garrett area, was drilling shale at 4400 feet, having passed up the discovery zone without a test. The partnership has authorized 4 tests to be drilled immediately northwest and west of the producer.

Dual Completion Is Asked For McMullen County Well

Edwin M. Jones has asked permission of the Texas Railroad Commission to dually complete and test his Ezzell C-2, the discovery well of the San Caja field, McMullen County. The well, drilled to 7264 feet has 5½-inch casing cemented at 7017 feet.

The Carrizo sand encountered at 6416 feet carried gas and distillate with gas-water contact at 6456 feet. Open flow capacity is estimated at 35,000,000 cubic feet daily.

The Massive Wilcox sand, encountered at 6888 feet carried gas and distillate with gas-water contact at 6922 feet. Open-flow capacity is estimated at 71,500,000 cubic feet daily.

Permission was asked to produce the Wilcox sand through the tubing and the Carrizo sand through the annular space.

It is thought that the field will cover 2500 to 3000 acres in McMullen County with an additional possible 2000 to 3000 acres in Live Oak County. The field is thought to have an effective and efficient water drive as both sands flowed water during testing operations.

Permission was asked to test the well for a 90-day period at a rate of 7,000,000 cubic feet daily, the gas to be taken from either or both sands at the option of the operator.

The Ezzell gas field produced since 1937 for fuel and since 1941 for repressuring operations in the Ezzell oil field has had a total cumulative production of something over 1,500,000,000 cubic feet. Approximately 450,000,000 cubic feet would be replaced during the test. Pressures in this field have declined from 450 pounds to 220 pounds.

Humble Oil & Refining Company was the only other lease holder appearing at the hearing and expressed agreement with the proposed testing procedure.

Seek Carthage Rules

Panola County operators and land owners met in Shreveport last week to discuss rules and regulations for the Carthage wet gas field, its new extensions and the newly discovered deep oil pool. The Texas Railroad Commission will be asked to establish rules for the area at an early date.

The Petroleum Administration for War has made no spacing rules for the area, but has been allowing wildcat wells drilled two miles apart. No field permits have been issued in recent months.

Texas Well Permits

Permits to drill 45 new wells in Texas were received by the Railroad Commission last week. The list included 20 locations in West Texas, 8 in North Texas, and 6 in the Southwest Texas District. There were 5 in West Central Texas, 4 in the Gulf Coast, and one each in the Panhandle and East Central Texas.

Texas Gulf Coast

Colorado County Well Completed in Two Sands

Shell Oil Company, Inc.'s Hill State Bank 1, wildcat northeast of the Sheridan Field in western Colorado County, has been dual-completed in two Wilcox sands, opening what may be termed a new producing area for the county. The well was perforated at 9340-84 feet, and lower perforations were at 10,194-250 feet, 10,298-368 feet, and 10,396-422 feet. From upper pay it gauged 210 barrels of 58-gravity condensate and 11 barrels of salt water through a 5/16-inch choke with casing pressure 2175 pounds and gas oil ratio 22,534-1. From lower pay it produced 125 barrels of 54-gravity condensate plus 25 barrels of salt water daily through a ¼-inch choke with tubing pressure 3490 pounds and gas-oil ratio 42,000-1.

Sinclair-Prairie Oil Company is setting up rig for Kollman 1, southeast of Frelsburg in the northern corner of the county. In the western edge of the county, Tide Water Associated Oil Company is preparing to move in rig to D. L. Underwood 1, an 11,000-foot test 3 miles northwest of the town of Sheridan.

Hardin County: American Republics Corporation-Houston Oil Company's H&TC Fee 2, west offset to the discovery well in the Beeck Creek field, was drilling below 6738 feet in shale. It had picked up the discovery Cockfield sand at 6240-46 feet, about level with the discovery, but operators do not plan to complete in the Cockfield yet. It is scheduled as a test to the Wilcox, probably going to 10,000 feet.

Shell Oil Company has abandoned Kirby Lumber Company 1, deep test 4 miles west of Saratoga at 9097 feet.

Fort Bend County: British American Production Company's Ed Hurta et al 1, outpost in the Needville Area, is drilling below 6500 feet in shale. A drill stem test at 5187-5201 feet, using ¼-

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inch chokes, recovered 500 feet of pipe line oil. First test, at 5182-94 feet showed 365 feet of mud and one stand of oil-cut mud.

Magnolia Petroleum Company's Dew A-1, outpost in the William Stafford League, Sugar Land Field, is drilling plugs from the 1989 feet of 13⅜-inch surface casing. It is scheduled to drill to 9000 feet.

Jefferson County: Butcher-Arthur, Incorporated will drill a deep wildcat in extreme western Jefferson County, its Security Bank & Trust Company 1 being in T&NO Survey 69, east of the Liberty County line and 6 miles northwest of Winnie. Glenn McCarthy has abandoned Wm. Stoeger 2, on the north side of the Stowell Field after drilling to total depth of 10,592 feet.

Galveston County: Glenn McCarthy & Phillips Petroleum Company's Maco Stewart 1, at Hitchcock, was still testing lower formations with no showing. A drill stem test was attempted at 11,500 feet but seat failed to hold, and another is being tried. Total depth is 12,595 feet with casing just off bottom.

Wharton County: H. C. Cockburn's H. P. Stockton 1, 3 miles northwest of East Bernard in the R. Boatright league, is drilling below 7510 feet after having picked up a sand with condensate odors at 7200-18 feet.

Harris County: Lenoir M. Josey, Inc.'s Josey Fee 2, on the west side of the Joyce Richardson Field, has cleaned itself into the pits from the new deeper sand opened by General Crude recently, but has not yet been gauged. Casing was perforated at 7138½-40½ feet and after flowing oil on a drill stem test, tubing was run for completion, the well cleaning itself into the pits, flowing 38-gravity pipe line oil through a ⅛-inch choke with tubing pressure 475 pounds and casing pressure 1440 pounds.

South Louisiana

Iberville Parish Well Another Humble Discovery

Humble Oil & Refining Company has registered another discovery in Adam Hymel 1, Iberville Parish, on what is known as the Laurel Ridge prospect, slightly north of a line between the White Castle and Darrow fields, where preliminary tests assure opening of a new field. Total depth is 10,846 feet in hard sand with casing at 10,737 feet. Perforations were made at 10,688-705 feet and the well flowed at the rate of 113 barrels of 49.5-gravity condensate daily through a ¼-inch choke with tubing pressure 3100 pounds flowing and 3450 pounds shut in. Gas-oil ratio is 50,000-1. It was shut in following initial test, but completion will be at this point.

Humble's Wilberts Minerals C-1, second test on the north flank of the Bayou Des Glaise dome where the company recently opened the first commercial production, is still dredging canal before moving in rig.

Acadia Parish: Sun Oil Company's C. J. Freeland 1, extends Egan field 1½ miles to the northeast, besides opening a new sand and giving the field its first oil production. Liner was perforated at 10,765-775 feet, just off bottom of the hole, and initial gauge, flowing through a ⅛-inch choke showed 207 barrels of 35.6-gravity oil daily under tubing pressure of 1750 pounds with gas-oil ratio only 690 to 1. This sand is below the level of the discovery, which produced condensate from 10,610-625 feet, also below Sun's Trimble 1 which produces gas and condensate from 10,480-500 feet. Both of the upper sands are thought to be present in the new well.

Evangeline Parish: Gulf Refining Company's Schlicher-Thomas A-8, on the south flank of Pine Prairie Dome, failed to show in the 9495-9504-foot zone, squeezed, and is now making another test with casing perforated at 9526-36 feet. It has tested at intervals from 10,428 feet up without encouragement.

St. Charles Parish: General American Transportation Company 1, on the Good Hope prospect, 12 miles west of New Orleans, reported sand indicated by electric logging at a depth of 7830-50 feet. The sand was checked with side wall cores and showed good oil odor and a fair ether cut. It is now drilling below 8701 feet in shale.

St. Landry Parish: Sun Oil Company's Laurent Patin 1 has been completed at total depth of 9803 feet, extending production in the Cankton field southward. Sand was recorded on the electric log at 9710-20 feet, although core from 9700-20 feet recovered 11 feet of sand showing oil. At this point the well ran 38 feet lower than the discovery to the north. It has been brought in from perforations at 9710-20 feet, and cleaned itself into pits, but was then shut in for tankage with no gauge taken. Tubing pressure is 1725 pounds, shut in.

Discovery Allowable Is Asked for Humble Well

Sun Oil Company has asked the Texas Railroad Commission to consider its Bender 32 well at Humble, Harris County, as an extension and given a discovery allowable. This well was drilled on the flank of the dome and encountered at 5050 to 5078 feet in the Yegus formation, a new sand below anything encountered in the John A. Deering wells nearby. The company asked that this sand not be named separately, but be included in the Humble (Light) field. Present allowable is 55 barrels per day and it was testified that the well can produce 120 barrels per day without waste.

☆

ERNEST MAHLER, executive vice president of the Kimberly-Clark Corporation, of Neenah, Wisconsin, has been elected to the board of directors of Allis-Chalmers, Milwaukee, Wisconsin, effective June 1. He takes the place of R. G. Hutchins, retired. John J. Kane has also been named patent attorney for Allis-Chalmers, succeeding George F. DeWein, resigned.

North Louisiana

Six Months Completions Well Under 1943 Figure

Oakes, Easton & Logan's Ramsey 2, 27-13-16, DeSoto Parish tested at total depth of 5346 feet with a slight show of oil, and H. D. McDonald's Long Bell Lumber Company 1, 34-9-13, Sabine Parish, plugged back from 5778 feet to 3300 feet and perforated with 100 shots between 3252-74 feet, making a salt water flow with a good oil show. Further tests are being made on each.

O. F. Shaver's Gaines 1, NE SW 8-

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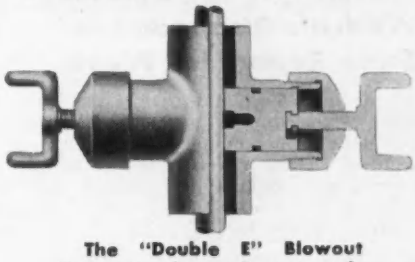

The "Double E" Blowout Preventer for sucker or polished rods works on the same principle as the stripper but is constructed somewhat differently. Instead of the soft rubber packing, cylindrical steel rams are used, to which has been molded a fabric reinforced sealing element. This oil resistant synthetic rubber element backed by the steel ram prevents leakage against high pressure.

The use of the Blowout Preventer in conjunction with the Sucker Rod Stripper provides ideal protection against handling wet rods and pressure surges in heading wells. When the two devices are used together, the top of the blowout preventer is threaded 3" line pipe male to screw into the bottom of the Stripper housing.

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21-13, Bossier Parish, and Chicago Mill & Lumber Company's Mutual A-1, SW NE 30-12-10, Tensas Parish, are new wildcats. There were four field locations in the Holly field of DeSoto Parish, one in the Caddo-Pine Island area of Caddo Parish, one in the Lake St. John field of Tensas Parish, and two gas well locations in Union Parish.

Completions included one in the Lake St. John field and one in the Holly Ridge field of Tensas Parish and one gas well completion in the Union Parish field of Interstate National.

Records of the Louisiana Conservation Commission show completion of 122 wells during the first six months, from January 1 to June 30, 1944, in North Louisiana, compared with 151 completions for the same period in 1943.

Of the 122 completions, 59 were oil producers and 11 were gas wells, 35 wildcats were reported dry and 17 field operations were failures. In the 1943 total for the first six months, 60 completions were oil wells, 18 were gassers and 73 were failures.

Arkansas

Wildcats Disappoint in State Report for Week

One new wildcat location and 10 new field wells started in South Arkansas, coupled with renewed leasing in the vicinity of the recent gas-distillate discovery in Carter Oil Comapny's G. F. Wilson 1, C SW NW 33-16-18, Union County, balanced one wildcat abandonment and disappointing outlook for two other exploratory operations in the area.

Lion Oil Refining Company's Nick 1, near Nick Springs, Union County, is the new wildcat location. Marine Oil Company's Banks 1, south of Hillsboro in the southeastern part of Union County, abandoned at 7765 feet. Crescent Drilling Company's Cooley 1, 5-17-20, Columbia County wildcat, tested salt water at 7815 feet and operators are considering abandoning. Northern Ordnance's J. B. Wells 1, 25-16-19, Columbia County, 1½ miles north of Carter Oil Company's Wilson 1 discovery, has reached 7177 feet without favorable show expected below the 7000-foot level.

Ashley County: Union Producing Company's Crossett E-1, wildcat, was drilling below 7800 feet.

Little River County: H. H. Temple's Dierks 1, 30-11-30, is drilling below surface casing.

Nevada County: Placid Oil Company's J. B. Silvey 1, 13-13-22, is drilling below 3040 feet.

Ouachita County: G. H. Vaughan's J. F. Haltom 1, 28-15-18, is below 2000 feet. Skelly Oil Company's Camden Coal & Clay Co. 1, 12-12-18, is below 2400 feet. Crow Drilling Company's Yarbrough 1, 30-15-19, is preparing to core below 6230 feet.

HOMER T. WHITTEKIN, 63, died June 28 at Lockhart, Texas, following an accident on an oil lease which he was operating. He was born at Oil City, Pennsylvania, and had worked as driller, superintendent, and drilling contractor in several states including Indiana, Kansas and California. He is survived by his wife and a son now in the Navy.

The Brand Wagon

You know the yarn about the enterprising Italian who got a job on a garbage wagon to educate himself for the grocery business. By saving and sorting labels from all cans found in the garbage, he acquired exact knowledge of which brands consumers prefer. Having what the customer wants is all-important. Thirty-six years in the supply business have enabled us to count labels accurately, and to acquire rather more than our share of preferred lines by way of justifying the confidence of men who TRY PELCO FIRST.

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Three Heidelberg Wells Hold Interest for Week

Sun Oil Company's Mack Lindsey 1-A, NEc NW NE 31-1-13, Heidelberg field on a 13-minute drill stem test of Christmas sand at 4930-52 feet with 3/16-inch top and ⅜-inch bottom chokes filled 3375 feet of 4½-inch drill stem with 19.8-gravity oil, an entry rate into the hole of about 235 barrels per hour. The company will perforate and produce from only the basal section of the Christmas sand, instead of following the usual procedure of perforating the entire Eutaw section above water level.

Graham & Lewis' W. H. Husband Unit 1, SW SW 29-1-13, had 170 feet of saturated sands and plans a record perforating job, calling for 2300 shots. Electric log was run to 5016 feet, total depth.

Gulf Refining Company's T. D. Lewis 2, SW SW 20-1-13, showed salt water on initial test at 4677 feet, 8 feet above the water level of other wells in the field. Bottom perforation was at 4673 feet, 4 feet above the total depth. Preparations are being made to squeeze.

Jeff Davis County: S. W. Richardson's C. E. Berry 1, C SE NW 24-9-19, took 26 cores from 7733-7983 feet, with sands from 7802-28 and 7853-86 feet with odor and taste of gas-distillate, and is drilling below 8600 feet.

Wayne County: In the Eucutta field, Gulf Refining Company's G. S. Stanley 6 was completed and is awaiting pumping unit.

Adams County: Humble Oil & Refining Company's Ida Stowers 1, 9-8-2, which made an oil show on drill-stem test at 5634-36 feet, is drilling below 8100 feet in chalk.

North Carolina Leases 2 Million Public Acres

2,000,000 acres of state-owned land, mostly marshes, and river, lake and sound bottoms of eastern North Carolina, have been leased to two oil companies, both of which have promised to drill wells within 18 months, it was announced by state officials.

Standard Oil Company of New Jersey has been granted all the land east of the 77th meridian and north of a line drawn from Washington, North Carolina, eastward to Cape Hatteras. The company had sought all the coast from Virginia to the South Carolina line. Coastal Plains Company, already lessors of portions of Holly Shelter and the bottoms of several rivers, has been given rights east of the 77th meridian and south from a line extending from New Bern to Ocracoke Inlet.

In 1883 the General Assembly gave to the public schools any unclaimed lands in Eastern North Carolina, and consequently the schools acquired large tracts of swamps and marshes, many acres of which still are unmapped. A later act gave to the Board of Conservation and Development all natural lakes, sounds and streams. The board in addition owns large portions of lands set aside as game refuges.

The state has reserved about a third of its coastal holdings from terms of the leases.

Florida

State's Deepest Test Prepares to Drill Ahead

Consumers Oil & Fuel Company's State 1, C NW 24-45-35, Dade County, and C. L. Arter's National Turpentine & Pulp Company 1, C SW NE 11-8-9, Alachua County, are about ready to spud.

Collier County: Humble Oil & Refining Company's Gulf Coast Realty 2, C SW SE 30-48-30, deepest well ever drilled in Florida, is changing over at 12,312 feet to 3-inch drill stem. The well had an oil show between 11,623-39 feet.

Dade County: W. G. Blanchard's Everglades 1, SW SW 31-53-35, is drilling at 9790 feet, after running electric test at 9735 feet. Blanchard's Grossman 1, NE SW 25-55-37, has resumed drilling after driving 12½-inch casing to shut off quicksand at 370 feet.

Highlands County: Humble Oil & Refining Company's Carlton 1, C SW NE 34-38-29, has derrick up and is waiting on rig.

Alabama

Gas Showing Reported in Shallow-Depth Wildcat

Two Alabama wildcats are reaching interesting depths and a third is benig watched because of gas showing at shallow depth. H. L. Hunt's Robert T. Land 2, C SW NE 36-11-5, Choctaw County, is in the Tuscaloosa below 4400 feet; Humble Oil & Refining Company's Minnie E. Skinner 1, C SE NW 10-3-10, Escambia County, is drilling below 5510 feet; Stanolind Oil & Gas Company's Jack Woods A-1, NE SE 23-14-15, Lamar County, which showed for a million foot gasser in the Pottsville sand around 495 feet, is drilling at 1250 feet, after setting 13⅜-inch casing to 1160 feet. The Texas Company's Odom 1, C SE SE 27-4-3, Washington County, is below 1500 feet.

Michigan

Wexford County Wildcat About to Reach Dolomite

C. W. Teater's Wexford Road 1, NE SE NW 10-21n-9w, Wexford County, is rating the top spot in Michigan wildcat interest and will reach the Dundee dolomite objective in early July. The tenth deep well drilled in the Cadillac area since 1930, Teater's wildcat is less than a mile southeast of the Cadillac city limits and two miles north of a 4100-foot test, drilled by Freeman Oil Company in 1943, that carried a Dundee oil show. Upper markers have set the current wildcat from 45 to 60 feet higher structurally than the Freeman test.

Gulf Refining Company drilled 20 or more shallow core tests in the area last year. Teater has leased 530 town-lots, Gulf a smaller number, city parks, school sites, railroad rights of way, and riparian lands on Lake Cadillac that cuts across the mapped structure.

Missaukee County: East Norwich field, controlled by Sun Oil Company, given little attention until this spring because of low initial yields from the 4500-foot Richfield, continues to assume more importance. Sun completed Horner 10, S½ SE NW 12-24n-5w, for 9 barrels per hour after a 4000-gallon acid treatment. It was the fourth recent well to produce from 100 to 350 barrels per day.

Ogemaw County: Sun Oil Company's Holshoe 1, N½ SW SE 17-22n-4e, Logan Township wildcat, blew out at 1422 feet and fired, damaging rotary rig with condition of hole undetermined. Test logged Berea sand at 1405 feet and showed estimated 3 to 5 million feet of gas.

WESTERN CANADA

Folding Mountain Area In Alberta to Be Tested

Imperial Oil Ltd., Anglo Canadian Oil Company and Home Oil Company have joined forces to test a 50,000-acre block dominating the Folding Mountain structure in the Central Alberta Foothills. The initial test, Jasper Syndicate 1, W½ Lsd 2 19-49-26w5th, is scheduled to start July 15, using a diesel rig. Objective horizons are Devonian limestone and Cambrian, with potential oil and gas horizons expected from 2500 to 6000 feet. Triassic, overlying Madison limestone, is exposed along the crest of the structure.

Thirty miles east of the Jasper Syndicate test, Imperial Oil's Coalspur 1 is drilling below 2000 feet, with the objective the Madison limestone, looked for around 10,000 feet. Thirteen miles north and west of the Jasper site, Shell Oil Company of Canada started Solomon Creek 1 in 1943, and suspended at 4774 feet, when it became apparent that the Madison would be deeper than anticipated.

Survey work in the general area is being done by several companies which have acreage, and the dominion geological survey has three parties in the field engaged in detailed geological mapping.

Princess-Steveville Syndicate No. 1 test on the Denhart Dome, first Alberta Plains well to encounter possible commercial oil production in the Bow Island sand, was installing separator and tanks, preparatory to production test. The well swabbed water-free 25-gravity oil at rates ranging from 2 to 5 barrels hourly, with a gas volume of around 750,000 feet daily, from the Bow Island between 2520 and 2567 feet. After perforation of the sand, the well was blown at 6-hour intervals, appearing capable of at least 50, and possibly as much as 125 barrels daily.

Canada Gains 8 Drilling Wells in Period of Month

Western Canada had 8 more wells drilling on July 1 than a month previously, as the number increased to 54. Of this number, 31 were outside Turner Valley and 23 in that field. The areas outside Turner Valley largely accounted for the increase in operations, development being under way in 25 of the miscellaneous, widely scattered areas of Alberta and 3 areas in Saskatchewan.

J. C. KNOLL, for 1½ years connected with Noble Drilling Company on the Canol project, has returned to Fort Worth, Texas and is with Norvell-Wilder Supply Company.

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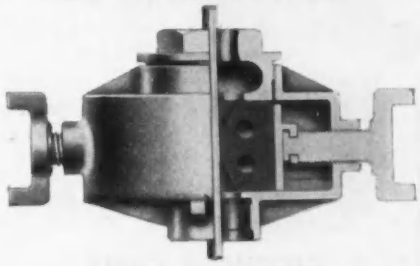

The "Double E" Adjustable Sucker Rod Stripper is the most economical and practical tool of its type. It not only does an excellent job of cleaning oil and paraffin from sucker rods as they are being pulled, but it has the very fine advantage of having retractable rubbers which can be withdrawn into the housing when not needed for stripping. This permits a long rubber life and also permits adjusting the rubbers against the rods to compensate for normal wear. The packing elements are of soft rubber (two halves) and readily accommodate any size rod or coupling. An examination of the cut shows how the packing is screwed against or backed away from the rods.

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DALLAS 9, TEXAS

U. S. Exploratory Completions

ARKANSAS WILDCATS

Union County—Discovery: Carter Oil Co.'s C. F. Wilson 1, c sw nw 33-16-18, 2 mi n Mt. Holly oil pool, 3,600,000 gas 240 bbls white dist fr Smackover lime 6985-98 ft, td 7090 ft.

Union County—Failure: Marine Oil Co.'s Banks 1, c se se 7-19-13, se sec of county, near Hillsboro, abnd td 7765 ft.

CALIFORNIA WILDCATS

Fresno County—Failure: Texas Co.'s S. P. 58-21, sw sw se 21-19-16, Coalinga Northwest area, light gas, gassy wtr, Cretaceous 10,518 ft, abnd 10,558 ft.

Kern County — Failures: Rothschild-Bender Oil Operations' Sheep Springs 1, se sw se 17-19-21, Cymric area, abnd 3282 ft.

Trico Oil and Gas Co.'s 24-1, sw sw nw 24-29-21, Cymric area, abnd 1400 ft.

Standard Oil Co.'s Russell 1, se ne nw 28-29-26, Greeley area, abnd 350 ft.

Los Angeles County—Failure: Hunsaker & Atha's 5-4, se se sw 27-4-14, Rolling Hills area, suspended 3380 ft.

Madera County—Failures: Texas Co.'s Moffat 47-1, ne se sw 1-12-14, Moffat Ranch area, no gas sands, abnd 3996 ft.

Union Oil Co.'s Floto 1, corehole, sw sw ne 5-11-18, Madera area, abnd 2670 ft.

Union Oil Co.'s Smith 1, corehole, sw nw nw 22-11-19, Madera area, abnd 1195 ft.

San Joaquin County—Failure: Standard Oil Co.'s Gerhart Comm. 1, se nw sw 24-2-5, Banta area, abnd 5900 ft.

Santa Barbara County—Failures: J. I. Anderson-Southern California Pet. Corp.'s Archambeault 1, se ne se 3-7-32, Los Alamos area, redrilled fr 2500 ft, abnd 4765 ft.

Union Oil Co.'s Prell 1, swc Prell lse, 30-10-33, Santa Maria Valley area, abnd 2878 ft.

Ventura County—Failure: Mayo Oil Co.'s Montgomery 1, Lot "C" 16-2-18, Simi area, Eocene barren, abnd 4000 ft.

ILLINOIS WILDCATS

Edwards County—Failure: Ashland et al's Crumb 1, nw ne nw 1-1n-14w, abnd 2989 ft.

Jefferson County—Failures: Redwine's Laux 1, ne nw 15-1s-2e, abnd 3765 ft.

Cameron et al's Watkins 1, nw se ne 24-2s-1e, abnd 2422 ft.

Richland County — Failure: Smokey Oil's Winters 1, ne nw ne 30-3n-11e, abnd 3340 ft.

Wabash County—Failures: Sinclair Wyoming's Racster 1, sw sw se 18-1s-14w, abnd 3191 ft.

Tucker's Wright 1, sw nw se 20-1s-13w, abnd 2917 ft.

Dye et al's Betebenner 1, ne ne 18-1n-14w, abnd 3178 ft.

Wayne County—Failures: Texas Co.'s Watts 1, se se nw 15-3s-6e, abnd 3515 ft.

Pure's Trotter 1, sw se se 17-1n-8e, abnd 3150 ft.

Gulf's Pruitt 1, sw nw sw 15-2n-6e, abnd 3235 ft.

Wayne County—Discovery: Pure's Thompson 1-A, nw nw nw 26-2n-7e, McCl 3026-32 ft, pump & flow 427 bbls, td 3082 ft.

INDIANA WILDCATS

Gibson County—Failure: Cherry et al's Redmann 1, se ne ne 27-3s-12w, abnd 2728 ft.

Knox County—Discovery: Baldwin et al's Steckler 1, ne ne nw 35-1n-12w, Biehl sd 1407-19 ft, pump 25 bbls, td 1420 ft.

Knox County—Failure: Robbinson et al's McDonald 1, ne nw 29-3n-9w, abnd 1742 ft.

KANSAS WILDCATS

Dickinson County — Failure: Nelson Drlg. Co.'s Solomon 1, sw nw 19-13s-1e, Hunt 2825 ft, Simp 3226 ft, Arb 3261 ft, abnd 3299 ft.

Graham County—Failure: Texas Co.'s Fitch 1, se se se 2-7s-21w, Arb 3682 ft, abnd 3740 ft.

Phillips County—Failure: Texas Co.'s Winklebeck 1, ne ne nw 31-4s-18w, Lans 3090 ft, Arb 3460 ft, abnd 3483 ft.

Rooks County—Failure: Barnsdall's Zanoung 1, sec sw 20-9s-17w, Lans 3275 ft, Simp 3619 ft, Arb 3623 ft, abnd 3698 ft.

Rush County—Failure: Vickers et al's Hermann 1, sw sw ne 12-16s-18w, Lans 3260 ft, Arb 3255 ft, abnd 3633 ft.

Russell County—Failure: Stanolind's Seeley 1, sw se sw 1-13s-15w, Arb 3210 ft, abnd 3403 ft.

Saline County—Failure: Cohen's Lindberg 1, nw sw se 10-16s-4w, Misener 3472 ft, Vi 3539 ft, abnd 3686 ft.

Sedgwick County — Failure: Texas Co.'s Blackford 1, ne ne ne 24-25s-2e, Miss 2820 ft, Misener 3196 ft, Simp 3272 ft, Arb 3347 ft, abnd 3376 ft.

Sumner County—Failure: Texas Co.'s Craven 1, ne ne nw 27-33s-2e, Miss 3480 ft, Simp 3629 ft, Arb 3674 ft, abnd 3730 ft.

Trego County—Failure: Phillips' Hacker 1, se se ne 12-13s-23w, Lans 3704 ft, Simp 4378 ft, Arb 4384 ft, abnd 4438 ft.

KENTUCKY WILDCAT

Daviess County—Failure: Slaughter's Birckhead 1, 16-N-30, abnd 1671 ft.

SOUTH LOUISIANA WILDCAT

Cameron Parish—Failure: Continental's McCain Est. 1, 2310 n&e of swc 21-12s-8w, abnd

MICHIGAN WILDCATS

Clare County—Failure: Pure's State A-1, s½ ne se 15-20n-5w, Dundee lime, abnd 3895 ft.

Clinton County—Failure: A. E. William's Andrews 1, se nw nw 29-7n-2w, Dundee lime, abnd 2933 ft.

MISSISSIPPI WILDCAT

Smith County—Failure: W. L. Goldston & Fohs Oil Co.'s Smith County Oil Co. 1, 379 n 723.5 e swc 30-3-6, abnd 8085 ft.

NEW MEXICO WILDCATS

Eddy County—Failure: Humble's Carpenter-Federal 1, c sw ne 20-1s-30e, brown lime 3480 ft, abnd 3517 ft.

Harding County—Failure: Adams & McGaha's State-Kerlin 1, c nw se 21-21n-30e, abnd 1134 ft.

Lea County—Oil Discovery: Fred Turner Jr. et al's State 1-B, c se sw 4-17s-36e, 2¼ mi w by s of Lovington field, elev 3884 ft, anhydrite 1900 ft, Cowden anhydrite 2710 ft, Yates 3020 ft, San Andres 4670 ft, flow 25 bbls hr, 1-in, natural, San Andres 4975-5175 ft.

San Miguel County—Failure: Bond Jones et al's State 1, c se sw 13-15n-12e, elev 7509 ft, granite 1230 ft, abnd 1231 ft.

WEST TEXAS WILDCATS

Andrews County—Oil Discovery: Stanolind's Midland Farms Co. 1-F, 1993 ft snl 1982 ft ewl G&MMB&A sec 1, blk 42, T-2-N, 6½ mi ne North Cowden field, elev 3084 ft, anhydrite 1920 ft, base salt 3084 ft, Yates grains 3140 ft, Grayburg 4510 ft, pump and flow 548 bbls 31.6-gr oil, 41 bbls wtr, natural, Grayburg saturation 4825-80 ft, td 4942, pb 4880 ft.

Lynn County—Failure: Phillips' Bartley 1, 683 ft snl 673 ft ewl E.L.&RR Co. 1372, blk 1, elev 2981 ft, jkd and abnd 4285 ft.

Pecos County—Failure: Milton Unger et al's Bennett-Robinson 1, c n¼ of s¼ of e¼ H&GN Ry. 68, blk 10, elev 2445 ft, abnd 1765 ft.

Ward County—Failure: Bert Fields and D. C. DeVito's University 1, se se sw sec 19, blk 16, elev 2607 ft, lime 2740 ft, abnd 2995 ft.

WEST CENTRAL TEXAS WILDCATS

Eastland County—Failure: Kerlyn Oil Co. et al's Maddox 1, 698 ft nsl 4264 ft ewl HT&B Ry. 31, A-314, abnd 4305 ft.

Jones County—Failure: Thos. D. Humphrey et al's John 1, 2816 ft snl 330 ft ewl T&P Ry. 51, blk 16, elev 1688 ft, abnd 2575 ft.

Shackelford County — Failure: Roeser-Pendleton's Newell 1, 1356 ft snl 330 ft ewl E.T. Ry. sec 142, abnd 1669 ft.

SOUTH CENTRAL TEXAS WILDCAT

Lee County—Failure: Seaboard Oil of Delaware's O. Kissman Est. 1, 467 fr n&wl 312-ac lse, 2500 fr nl 3000 fr el J. Price sur, abnd 4495 ft.

SOUTHWEST TEXAS WILDCATS

Jim Hogg County—Failure: J. W. Gorman's W. H. Yaeger 1, 1400 w of el 467 n of sl 400-ac lse, sur 167, sec A-28, abnd 3782 ft.

Zavala County—Gas Discovery: Texas Co.'s W. Van Cleve 1, 1157 fr nl 3300 fr el A. Van Cleve sur 8, A-1216, 12¼ mi nw Crystal City, perf 1960-65 ft, flow est 720,000 gas, 5/16-in, td 2538 ft.

LOWER TEXAS COAST WILDCATS

Brooks County—Failure: Sun's J. D. Cage et al 5, 857 fr nl 2640 fr wl Tex-Mex RR sur 669 7350 fr el 23,219-ac lse, abnd 7946 ft.

Dewitt County—Failures: Arkansas Fuel Oil Co.'s Emil J. Boldt et al 1, 753 fr el 826 fr nw of 174-ac lse, Otto Von Roeder sur A-471, elev 290 ft, sand 8475-88 ft, abnd 9015 ft.

Shell's Alma Blackwell 1, 1980 fr s&el P. F. Breeden sur 6 on 642.4-ac tr out of 1389-ac lse, elev 197 ft, abnd 10,431 ft.

Nueces County — Gas Discovery: Hewit & Dougherty's Celestia Dodson 1, 467 fr s&wl lot 13 in sh 8 Bluntzer subdvn, Casa Blanca

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Victoria County—North Keeran Gas Discovery: Dewin Neilsen et al's John Kounty 1, 660 fr nel 660 fr sel 80-ac lse, Brown & Dodd subdvn, blk 13, Agapito de Leon sur, elev 57 ft, open hole flowed 5-10 bbls, lots of gas, perf 4759-61 ft, comp as gas well, no gge, shut in 4761 ft.

TEXAS GULF COAST WILDCATS

Chambers County—Smith Point Discovery: Standard of Texas' State-Galveston Bay 1-109, 1980 fr nw 660 fr swl sec 109 1½ mi offshore, sand 8130 ft, perf 8135-46 ft, flow 250 bbls 42-gr, ¼-in, td 8626 ft.

Colorado County—Discovery: Sinclair Prairie's A. J. Thompson 1, 1943 fr nl 673 fr wl Chas. Fritchie sur A-199, dual comp, perf 8177-82 ft, flow 73.5 bbls 54.8-gr, 3,165,000 gas, ¼-in; perf 9288-93 ft, flow 59 bbls 58.9-gr, 738,000 gas, ¼-in, td 10,220 ft.

Grimes County—Failures: Northern Ordnance's J. E. Quinn 1-A, 6580 fr sl 9200 ft wl S. F. Austin sur, blk 17, 1080-ac lse, Cockfield 3630-26 ft, abnd 7515 ft in hard sand and shale.

Northern Ordnance's J. M. Quinn 2-C, 330 fr s&wl blk 18, S. F. Austin sur, 200-ac lse, abnd 3850 ft.

Hardin County—Failure: Shell's Kirby Lumber Co. 1, 1500 esely at ra fr ely /1 J. Kirby sur A-351 1445 nnw of m/sly/nwc Hardin sur, A-260, 2102.7-ac lse, abnd 9097 ft.

Jefferson County—Failure: Glenn McCarthy's F. H. Carpenter Est. 1, 483-ac lse, 2699 fr wl 445.7 fr sl Carpenter lse 2669 e of wl Sect 98, abnd 9643 ft.

Matagorda County—Failure: Ohio Oil Co. et al's Heffelfinger and Hermanson 1, start nwc P. Burnett sur lot 18 at Tres Palacios River ss 730 alg nl sur 1210 s to lcn, 1st hole 9888 ft, st and abnd 9716 ft.

Walker County—Failure: W. E. Allaun's U. S. A.-Central Coal & Coke Corp. 4, 430 fr nwl 330 fr nel 40-ac unit, abnd 7042 ft in sandy shale.

EAST TEXAS WILDCAT

Smith County—Failure: Bobby Manziel et al's Morrison 1, 660 ft snl 1520 ft ewl, S. J. Lott sur, Friendship prospect, elev 382 ft, Austin 3644-3705 ft, Woodbine 3770 ft, Georgetown 4158 ft, Goodland 5294 ft, Paluxy 5366 ft, Glen Rose 5707 ft, massive anhydrite 6990-7250 ft, Pettit 7907 ft, Travis Peak 8074, abnd 8109 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: Martin Properties' Morris 1, 830 ft nsl 759 ft wel sec 140, J. W. Harris subdiv, abnd 1356 ft.

Wayne King and S. W. Petre's Threet 1, 200 ft out sec of w-107-ac tr, S. J. Williams sur, A-786, abnd 1193 ft.

Young County—Failure: M. R. Stipe et al's Gilbert 1, 1850 ft nsl 1720 ft ewl TE&L Co. sec 221, abnd 999 ft.

NORTH TEXAS NEW PAY TEST

Montague County—Dodson Shallow Oil Discovery: J. A. Chapman and Ed. McFarlin's Dodson 5, 410 ft nsl 2598 ft ewl of 435-ac tr, T. R. Jackson sur A-394, elev 934 ft, pump 157 bbls 41-gr oil, 15 bbls wtr, Strawn perf 2808-18 ft, td 4542 ft, pb 2832 ft.

WESTERN CANADA WILDCATS

Southern Alberta Plains—Taber: Standard of B. C.-Nassau Explorations' Taber-Province 55-20B, lsd 11 20-9-16w 4th, non-commercial yield Taber sand, wtr in Ellis and Madison lime, abnd 3236 ft.

Legend: California-Standard Co.'s Legend-Province 2, lsd 14 1-6-12w 4th, abnd 3193 ft.

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■ One 122'x24' Wertzberger pipe leg steel Derrick w/Std. 7' substructure; One Griscom Russell vapor condenser, complete; One Royal water softener; One 5-sheave 62" Reagan travelling block. Falcon Seaboard Drilling Company, Phone Charter 4-2701, 551 Mellie Esperson Bldg., Houston 2, Texas.

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■ Engineer or Physicist to engage in study of reservoir performance as related to physical properties with major oil company. Individual should have aptitude and background to enable the mastering of mathematical analysis of problems in flow of fluids. Position offers good future. Give full personal data, experience and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 65, c/o The Oil Weekly, Houston, Texas.

■ Chemical Engineer or Chemist to engage in research analytical work with major oil company. Would include some field, some laboratory work. Past experience in high vacuum technique preferred. Position offers good future. Give full personal data, experience and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 64, c/o The Oil Weekly, Houston, Texas.

■ Research Geophysicist with several years experience preferably including field work and laboratory work, to engage in research geophysics with major oil company. In charge of work including evaluation of new ideas and experimental development of some. Position offers good future. Give full personal data, experience and salary desired. Our employees know of this advertisement. All answers strictly confidential. Address: Box 63, c/o The Oil Weekly, Houston, Texas.

■ MAN with geological or geophysical training and experience, wanted for foreign exploration and development work with large oil company. Give age, educational background, experience and marital status. Address: Box 62, c/o The Oil Weekly, Houston, Texas.

■ GEOPHYSICIST WANTED: Major oil company operating geophysical parties in Gulf Coast on contract seeks staff geophysicist. Duties supervision and interpretation. Headquarters Houston. Salary open. Apply by letter giving full details of education, experience, age, family, and draft status. Interview later if favorable. Letters held strictly confidential. Address: Box 67, c/o The Oil Weekly, Houston, Texas.

■ WANTED: PETROLEUM ENGINEERS and GEOLOGISTS, with field experience. Excellent opportunity with major oil company operating in Venezuela. Permanent positions. Engineers should be experienced in well completion practice and equipment. Mud control experience valuable. Give age, educational background, exp. and marital status. Address: Box 70, c/o The Oil Weekly, Houston, Texas.

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■ LAWYER: Above draft age, wants connection with independent oil company or individual operator; experienced in blocking acreage, examining and curing titles and trial of law suits. Can furnish best of references. Interview solicited. Address: Box 61, c/o The Oil Weekly, Houston, Texas.

■ PETROLEUM GEOLOGIST: B.S., M.A., Ph.D., several years experience, thoroughly familiar with Gulf Coast Geology, desires position with strong independent operator or major oil company. State maximum salary and full particulars in first letter. Address: Box 68, c/o The Oil Weekly, Houston, Texas.

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ARKANSAS

Union County: Lion Oil Ref. Co.'s Nick 1, c ne ne 5-18-14, near Nick Springs, lcn.

CALIFORNIA

Imperial County: O'Quinn & Hadley's All American Acres Comm. 1, sw nw sw 11-9-12, Salton Sea area, lcn.

Kern County: K & G Drilling Co.'s 2, 25-29-20, Temblor area, drlg 447 ft.

Orange County: D. R. Young's Surf 1, 4-6-11, Surf area, mim.

Los Angeles County: Shell's Shell-Claiborne 88-4, se se se 4-4-17, Hasley Canyon area, mim.

Madera County: Union's Foss 1, corehole, ne se se 6-12-20, Madera area, gas test, mim.

ILLINOIS

Clark County: Ross' Daly 1, nw nw sw 35-11n-14w, lcn.

Gallatin County: Ryan Oil's Gloner et al 1, ne se sw 21-7s-9e, lcn.

Lawrence County: Robinson et al's Heath 1, nw ne nw 3-3n-13w, dr 348 ft.

Wayne County: Freeman's Seneff 1, nw ne sw 20-1n-9e, lcn.

White County: Lambert's Burkhardt 1, ne ne sw 16-5s-9e, lcn.

INDIANA

Gibson County: Cherry et al's Baird 1, sw sw ne 25-3s-12w, lcn.

KANSAS

Barber County: Dickey's Hargis 1, se sw 3-31s-14w, lcn.

Dickinson County: Westgate et al's Lockhart 1, ne se 11-16s-2e, dr 25, ft.

Douglas County: Skelly's Middlekauf 2, sw ne ne 21-13s-19e, lcn.

Osborne County: Iron Drlg. et al's Hirst 1, ne se se 10-10s-12w, mim.

Phillips County: Madza Oil's Brands Est 1, swc 19-2s-19w, dr 740 ft.

Pratt County: Texas Co.'s Toland 1, ne ne sw 7-26s-13w, dk.

Hatfield's Hinkle 1, nwc 33-27s-13w, lcn.

Reno County: Lion's Eccles 1, nec 7-24s-8w, rur.

Adair et al's Koch 1, sec 18-25s-4w, woc.

Russell County: Lauck et al's Hendrick 1, se se ne 2-15s-13w, lcn.

Saline County: Anderson-Pruchard's Currie 1, ne nw se 12-15s-1w, lcn.

Sedgwick County: Sohio's Limebur 1, ne se sw 21-27s-3w, dr 2075 ft.

KENTUCKY

Butler County: Miller et al's Hunt 1, 16-H-32, dr 269 ft.

Henderson County: Sohio's Rash Heirs 1, 24-O-25, lcn.

Hopkins County: Kentucky Nat'l Gas' Felker 1, 9-J-21, lcn.

McLean County: Sinclair Prairie's Williams 4, 10-N-23, lcn.

Muhlenberg County: Robertson's Robertson Est 1, 15-H-29, lcn.

Ohio County: Carter's Hines 1, 4-J-32, dr 377 ft.

Union County: Yingling's Slack Hrs 1, 20-P-18, dr.

NORTH LOUISIANA

Bossier Parish: O. F. Shaver's Gaines 1, 330 s 330 w fr nec sw 8-21-13, lcn.

Tensas Parish: Chicago Mill & Lbr. Co.'s Mutual Realty A-1, 1972 w 1980 s fr nec 30-12-10, lcn.

MICHIGAN

Allegan County: A. A. Winchester's Fleecer 1, n½ ne nw 27-3n-13w, rig.

Arenac County: R. L. Barr's Wojtowicz 1, c nw 27-19n-4e, lcn.

Huron County: C. W. Teater's Clark 1, nw nw nw 14-18n-13w, dr.

Wallace Markle's Groll 1, sw se nw 27-16n-15e, rig.

Isabella County: Sohio's Cummings 1, n½ nw nw 33-16n-6w, rig.

NEW MEXICO

DeBaca County: Frank Griggs et al's Steele Ranch Co. 1, ne ne ne 26-4n-24e, 7½ mi nw Fort Sumner, sp on 4500-ft test.

Lea County: Humble's State 1-O, c ne nw 1-12s-34e, lcn 5500-ft San Andres test.

Roosevelt County: W. J. Peterman et al's Federal-Peterman 1, c se ne 21-2s-30e, lcn 3200-ft test.

WEST TEXAS

Edwards County: Shell's Elsie Honeycutt 1, 669 ft fr nel 1997 ft fr sel sec 7, T. C. Ry. sur, Cert No 155, lcn 7500-ft Ellenburger test.

M. C. Moore et al's T. O. Holman 1, c ne nw sec 24, CCSD&RGNG sur, lcn 5400-ft test.

Gaines County: Texas Co.'s J. L. Brown 1, 770 ft snl 580 ft wel labor 8, Lge 311, Gaines CSL sur, rur 5500-ft test.

Loving County: Standard of Texas' L. C. Link 1-22, 660 ft snl 1980 ft wel T&P Ry. 22, blk 55, Tsp. 2, lcn 4300-ft cable test to Delaware.

WEST CENTRAL TEXAS

Shackelford County: C. Miller et al's J. P. Dyer 1, 150 ft snl 1000 ft wel T&P Ry. 54, blk 12, lcn 1100-ft test.

Taylor County: West Central Dr. Co. et al's Reddin 4, Reddin field 3700-ft new pay test, 470 ft snl and 1100 ft wel 215½-ac tr, lot 4, J. A. Nabors sur No 9, lcn.

SOUTHWEST TEXAS

Duval County: J. W. Gorman's A. Hernat 2, 330 fr wl 1320 fr nl H&GN sur 67, 640-ac lse, elev 569 ft, lcn 4000-ft test.

Jim Hogg County: M. L. Massingill's C. W. Hellen 2, 330 ft n&wl blk 1, H&GN sur A-136, sec 23, mir.

Zapata County: F. D. Lefevre's Angel Garcia 1, 330 ft sw&sel blk 121, McCullough subdvn of sh 1, lcn.

SOUTH CENTRAL TEXAS

Bastrop County: Continental's H. H. Young et al 1, 2270 fr sl 2270 fr el 7333.3-ac lse, Wm. Medford sur A-49, lcn 4200-ft eest.

LOWER TEXAS COAST

Bee County: Windsor Oil Co.'s Clark Wood 1, 467 fr wl 1539.5 fr el 1485.5 fr sl 160-ac lse, J. McGeehan sur, lcn 5800-ft test.

Brooks County: Sun's J. D. Cage 6, 2230 fr wl 467 fr nl TM RR sur 665, 3500 fr wl 23,219-ac lse, elev 198, lcn 7500-ft test.

Dewitt County: Standard of Ohio's Andrew Kozck 1, 330 fr se&swl 85.9-ac lse 4200 fr sel 5200 fr nel L. Y. Criswell sur A-116, lcn 8900-ft test.

Fayette County: Seaboard Oil of Delaware's Gustav Oeser 1, 900 fr sel 467 fr swl 210.5-ac lse 467 fr swl 2700 fr sel J. G. Wilkinson sur A-108, lcn 5500-ft test.

Nueces County: Hewitt & Dougherty's J. R. Dougherty 1, 467 fr nel 1500 fr nwl 800-ac lse, J. J. de la Garza Montemayor sur., lcn 6500-ft test.

TEXAS GULF COAST

Colorado County: Sinclair Prairie's W. H. Kellman 2, 2095 fr wl 352 fr nl 109-ac lse, P. Piper sur A-447, on New Ulm blk, mir.

Grimes County: Moore & Ahern's H. A. Bennett 1, 330 fr sly/nl 330 fr el 56.5-ac lse, A. Brown sur, lcn 5500-ft test.

Wharton County: Humble's Donald & F. B. Duncan 2-B, 3420.8 sw of nel 7738.1 nw of sel David Wade sur 64 1284.1 w of nwc Chas. Gillis tr, Hungerford area, lcn.

EAST TEXAS

Cherokee County: W. H. Foster-Phillips' P. I. Bowling 1, 1362 ft ewl 660 ft snl of 260-ac tr, Wade H. Walters sur, ¾-mile nw Lone Star pool, rur for 8200-ft Travis Peak test.

NORTH TEXAS

Archer County: E. P. Griffin and Frank Wood's Griffin 1, nw nw ne sec 9, Palo Pinto CSL, 2 mi ne Dundee, lcn 5000-ft Ellenburger test.

Rathke Oil Co.'s H. F. Harmel 1-B, 330 ft snl 800 ft ewl blk 44, Meade "LM" Pasture subdvn, lcn 1500-ft test.

J. H. Wilder et al's B. T. McCarty 1, 800 ft nsl 1980 ft ewl of sec 20, R. Chisholm sur A-71, lcn 1500-ft test.

W. C. Young et al's J. F. Kovar 1, 300 ft out nec blk 53, Meade "LM" Pasture subdvn, lcn 1500-ft test.

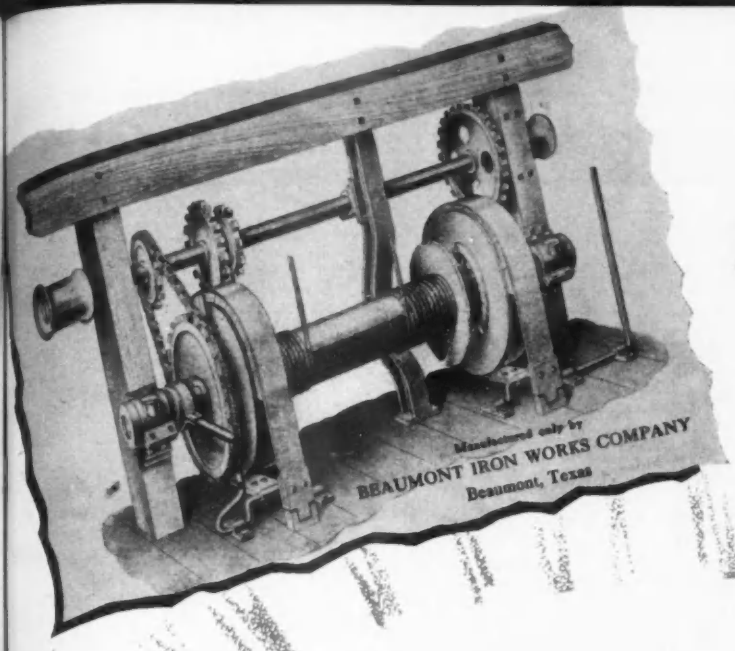
Clay County: Nixon Pet. Co.'s Perkins 1, 1275 ft snl 210 ft ewl blk 79, Byers sur, lcn 1250-ft test.

Cooke County: Tom L. Sessions et al's Arthur Hellman 1, 330 ft out nwc of 417-ac tr, Thomas Toby-G. Steele sur A-1060, lcn 2500-ft Ellenburger test.

Fred Snuggs et al's J. L. Newman 1, 330 ft nsl 450 ft wel C. Collingsworth sur A-211, ½ mi w Woodbine, lcn 5000-ft Ellenburger test.

Grayson County: Roy Blanton et al's J. M. Vaughn Jr. 1 330 ft nsl 2000 ft wel Sarah Shoto sur A-1079, lcn 5000-ft test.

A. W. McCOY, 55, vice president and head of Deep Rock Oil Corporation's land department, died June 30 after a brief illness. He became associated with Mexican Eagle Oil Company in Mexico in 1916, and later vice president of Marland Oil Company of Colorado. Early in 1940 he was named head of the land department and elected vice president of Deep Rock Oil Corporation. He was president of American Association of Petroleum Geologists in 1926 and was a member of the API, Geological Society of America, Mining & Metallurgy Society of England and other engineering groups.



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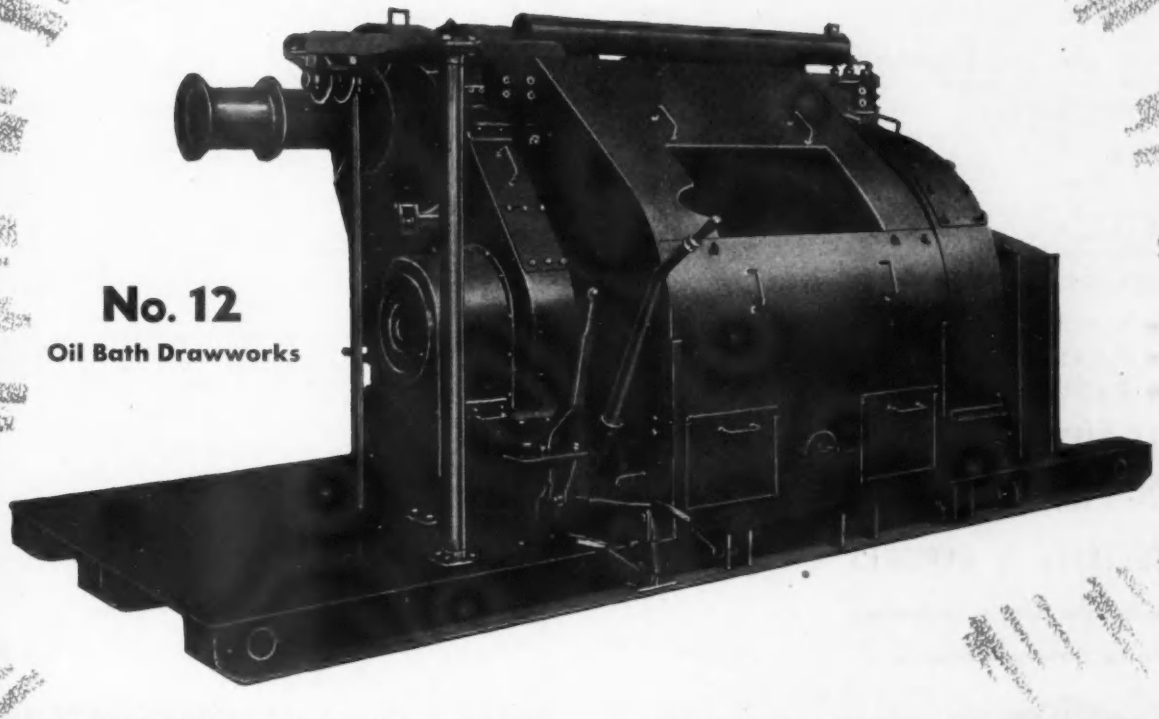

No. 12
Oil Bath Drawworks

Since early Spindle Top days, Beaumont Iron Works Company has pioneered improvements in drawworks design . . . and pioneering still goes on. The DREADNAUGHT No. 12 Oil Bath Drawworks, designed to drill the deepest wells with safety, economy and speed, employs a number of mechanical refinements plus many proven features of earlier DREADNAUGHT models.

The patented slow clutch is unique in that it eliminates keyways on the drum shaft between bearings and thus adds approximately 25% to the strength of the shaft and positively eliminates all torsional strain. The three large diameter heat-treated alloy steel shafts, together with an extremely short distance between bearing centers, imparts great strength to the shaft assemblies. Oil bath, or force feed, lubrication assures proper lubrication for all moving parts. The double cut-tooth sprockets are in keeping with the modern trend in heavy-duty drawworks design. Two-step clutches for easy engagement, "non-kick" brakes, special design roller bearings, water cooled rims, and other proven features explain why the DREADNAUGHT No. 12 is one of the most popular drawworks in the oil country.

See your composite catalog for complete details or write for descriptive literature.

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STANDCO BRAKE LINING
Is the driller's best friend because it makes the easiest brake known and "feeds off" evenly while drilling. It never scores brake rims. See page 2808 Composite Catalog.
Standco Brake Lining Co.
HOUSTON

Squeaks from the Bull Wheel

A Hot Expedient

Unfavorable rumors concerning the local bank caused a run. The president of the bank was casting about for some means of halting the withdrawals, when a farmer presented his check and demanded to be paid in coin.

Stepping behind a partition, the banker poured some silver dollars into a shovel and held them inside the office stove. In a little while he returned and dumped them into the farmer's hand. The man let out a howl.

"I'm sorry!" explained the banker. "In my hurry I forgot to warn you that we have been making those things so fast there has not been time to let them cool."

Confronted with this evidence of the bank's ready resources, the depositors stopped withdrawing.

Confidence

A rich asbestos manufacturer built a fine house just across the street from the residence of a sweet-spirited old lady and his family proceeded to enjoy themselves in what seemed to her a very worldly fashion.

But the old lady was never known to speak ill of anyone, even when her neighbors played tennis on Sunday. She only said:

"Dear me, they must have great faith in their asbestos."

Not Reliable

"It's all right, Sam. Just say to yourself, 'I'm going to beat him' and you'll win."

"Sorry, Boss; dat won't work. I knows what a big liah I is."

Guessing Game

Don't you know that you should always give half of the road to a woman driver?

I always do, when I find out which half of the road she wants.

He Forgot to Look

The curfew tolls the knell of parting day;
A line of cars winds slowly o'er the lea;
A pedestrian plods his absent-minded way
And leaves the world quite unexpectedly.

Playing It Safe

A private in an Army chapel was seen to bow slightly whenever the name of Satan was mentioned. One day the minister met him and asked him to explain.

"Well," replied the private, "politeness costs nothing — and you never know."

This Judge Was Drafted by NLRB

A judge, who was known for the speed with which he disposed of cases, was asked to explain it.

"I always listen to the plantiff, and then I make my decision."

"Never to the defendant?"

"Well, I did at first, but I found out it confused me."

Waiting

"No, you can't have any more candy. Haven't I already told you 'no' six times?"

"Well, all right. But I wonder where dad gets the idea that you're always changing your mind."

Confession

"Don't you know that if you keep on doing naughty things your children will be naughty, too?"

"Oh, Mother, now you have given yourself away."

Final Showing

"Have you really shown me everything you have in the shop?"

"Not quite, Madam. We have an overdue account of yours on our books, if you would care to see it."

First Hand

A blindfolded medium sat upon the stage, answering questions gathered from the audience by a roving assistant.

"This lady," announced the assistant, "has been deserted by her husband, and wants to know if he will ever return to her."

"Yes, he will return to her soon, and they will be very happy."

"Old girl," said the assistant, after the performance, "you were all wet on that last answer. That woman will never see her husband again."

"How dare you question my powers? I see into the future."

"Oh, yes. Well, I saw the woman!"

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Specializing in Magnetic Surveys
Contracts accepted for domestic and foreign projects, using the most improved instrumental and interpretative technique
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SHREVEPORT, LOUISIANA

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Form 265—Report of Material Received, 50 duplicate sets to book, size 5½ x 8½
Form 267—Pipe Tally—50 duplicate sets to book, size 4¼ x 8½
Form 280—Daily Drilling Report—33 triplicate sets to book, size 5½ x 8½
Form 282—Three Tour Drilling Report with Pipe Tally, size 8½ x 11—33 triplicate drilling sets, 10 duplicate pipe Tally sets to book
Form 290—Pipe Line Run Tickets—33 triplicate sets to book, size 4½ x 7½
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SHALE SEPARATOR
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Don't Be without one. Greatly prolongs the life of pumps and other equipment by eliminating destructive abrasives from drilling mud. Operates entirely from the flow of mud. The SAMPLE MACHINE, standard equipment on all Thompson Separators, provides accurate samples of foot by foot cuttings. Write for new catalog and prices.
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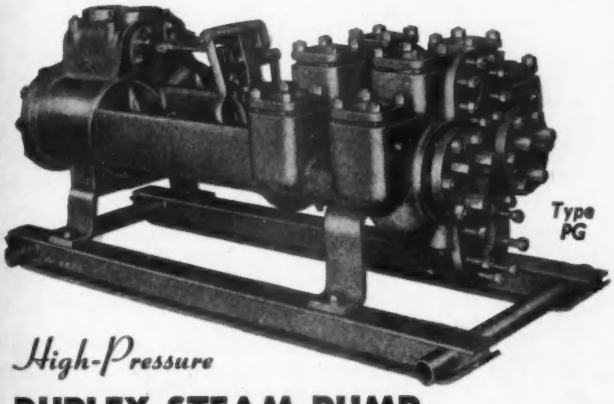
LOCKETT-WORTHINGTON



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DUPLEX STEAM PUMP

Dependable performance is typical of both Worthington Pumps and Lockett Dealer Service to companies producing and handling oil. Worthington Pumps and *genuine* Worthington Repair Parts are available — through Lockett Dealers — from Warehouses maintained in the principal oil fields of Texas and Louisiana, backed up by a large replenishing stock at our Houston and New Orleans Warehouses.

Whatever your pumping problem may be — whether you require a pump or a complete pump unit for a specific type of work — you are assured of getting prompt, dependable service through a Lockett Dealer.

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Notes for the Equipment Buyer and User

Lane-Wells Company Makes Personnel Changes

Lane-Wells Company has announced elevation of M. E. Montrose to vice president and manager of services and sales. He will direct the activities of the oil field divisions, and head office, export, and industrial sales. Montrose entered Lane-Wells employ in 1935 and, after serving as manager of both the Mid-Continent and Gulf Coast divisions of the company, was made vice president and general sales manager in 1939.

M. E. Montrose

Norman L. Dorn, vice president and chief engineer, will continue to head the engineering department.

Dr. Russell M. Otis has been advanced to manager of research and will manage the activities of the research department under the direction of W. T. Wells, chairman of the company.

Harvey L. Ballough, for many years associated with Douglas Aircraft Company, and, lately, with Goodyear Aircraft Corporation, has joined Lane-Wells as executive assistant to the president, Rodney S. Durkee. Ballough also will direct a newly established industrial relations department.

Captain D. S. Jeppson has been released from service in the U. S. Marine Corps and has rejoined the company in his former capacity of director and controller.

Dresser Industries Acquiring International-Stacey Corporation

Dresser Industries, Bradford, Pennsylvania, will acquire financial control of International-Stacey Corporation of Columbus, Ohio and subsidiaries in a step designed "to enlarge postwar participation in oil-field equipment potentials," H. N. Mallon, president of Dresser disclosed June 30.

The announcement followed a meeting of International-Stacey directors approving the transaction. Dresser directors had previously signified approval.

Dresser and International-Stacey stockholders will be asked to ratify the agreement in special meetings to be called soon. No changes in management or personnel of International-Stacey compaies are involved or contemplated, Mallon said.

International-Stacey and subsidiaries, a group of six companies, is a manufacturer of drilling and production equipment sold under the trade name "Ideco." Dresser Industries, with seven companies in its group, supplies related equipment to the oil industry.

Dresser's net worth is approximately $10,000,000 and that of International-Stacey, $5,000,000.

"The acquisition involves an exchange of Dresser stock for International-Stacey net assets," Mallon said, "on a basis substantially improving the working capital, current earnings and book value per share of Dresser capital stock."

Dowell Incorporated Announces Changes

D. V. Anderson has joined Dowell Incorporated as an engineer at Shreveport. Anderson has been with Permian Oil Company for the last several years in its production department at Midland, Texas.

Dowell Incorporated announces the opening of a treating station at El Reno, Oklahoma, with Mr. V. E. Lang as manager. Mr. G. G. McKenney continues in charge of the Dowell office at Guthrie, Oklahoma.

A. F. Bluebaugh, formerly with the Tulsa Rig & Reel Company and more recently with the Canol Project, is now a treating engineer with Dowell Incorporated at Seminole, Oklahoma.

New York Purchasers Group Elects Bratches Chairman

The oil company buyers' group of the Purchasing Agents Association of New York has elected as its chairman, W. H. Bratches, manager of purchasing and stores for Shell Oil Company. Bratches succeeds R. M. Morrison, general purchasing agent for The Texas Company, who was elected national chairman of the Oil Company Buyers' Group at the recent annual international convention of the National Association of Purchasing Agents. The membership of the New York group consists of purchasing agents actively engaged in this area in the procurement of material and equipment for domestic and foreign petroleum operations.

New Instrument Company Organized at Tulsa

W. R. Coleman, Marvin E. Morrow, Chester L. Sharp and John W. Wade, have organized Coleman Instrument and Manufacturing Company, 716 South Troost, Tulsa.

W. R. Coleman

The company specializes in precision machine work, electrical engineering and development and special instrument manufacturing. Speaking of its personnel, an announcement sent by the company says:

"Coleman formerly was sales manager and treasurer of Engineering Laboratories, Inc., and has had 10 years experience in the development and manufacture of precision instruments. Morrow for 10 years was associated with The Carter Oil Company's geophysical laboratory. Sharp is known as a master tool and die maker and precision machinist. Wade has had long experience in the manufacture and servicing of geophysical equipment."

Coleman will be general manager of the new firm.

D + B Division Appoints Prosser Mid-Continent Manager

F. L. Prosser has been appointed Mid-Continent sales manager of the D + B Division of Emsco Derrick & Equipment Company. Prosser's experience in the petroleum industry dates back to Roxana Petroleum Corporation, (now Shell Oil Company) at Tonkawa in 1923. He was later transferred to Seminole, where he spent several years as office manager and manager of warehouses in that area before Shell Oil Company moved him to field operations as production foreman for that locality, and later for the McPherson, Kansas. In 1936, he joined Emsco Derrick & Equipment Company and was assigned the South Texas and Gulf Coast territory. For the past two years he has been manager of field stores for the D + B Division, with headquarters at Dallas.

F. L. Prosser

Bethlehem Steel Company Reassigns Sales Personnel

Bethlehem Steel Company announces that H. H. Fuller has been elected vice president in charge of West Coast steel activities of the company, effective July 1, succeeding W. H. Stewart, who is retiring after 12 years, and who will continue in an advisory and consulting capacity.

Fuller joined the company at the close of the first World War. In 1936 he became assistant manager of sales for the New York district and two years later was appointed district sales manager.

The company's West Coast headquarters are at 20th and Illinois Street, San Francisco.

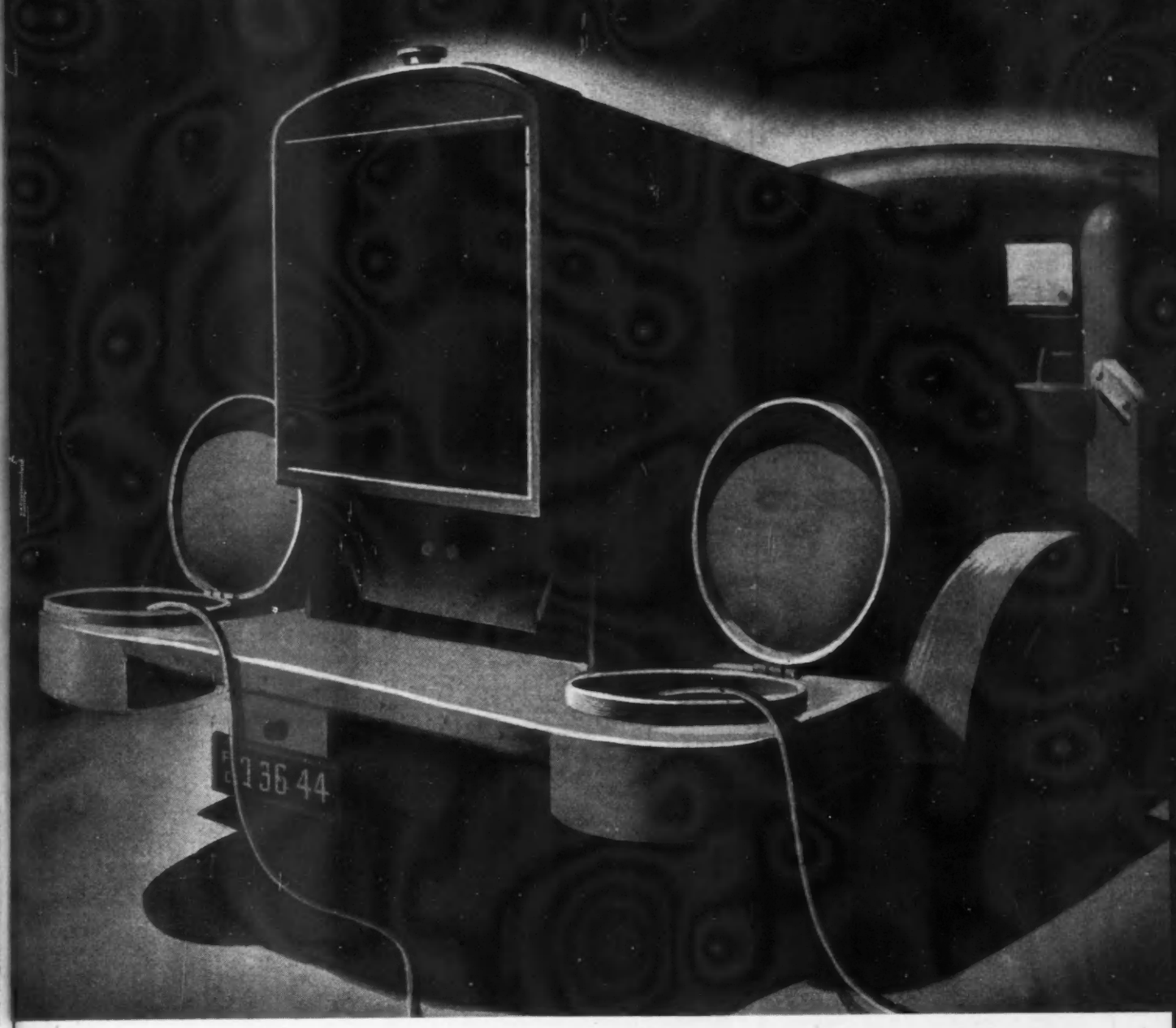
Other appointments have been announced as follows:

C. M. Mackall will succeed Fuller as manager of sales in the New York district, going from Pittsburgh, where he was general manager of central sales for the company. He started with Bethlehem Steel Company in 1926 in the training course for college men and joined the sales force in 1928. In 1938 he became assistant manager of sales at Philadelphia, was made assistant general manager of western sales in 1940 with headquarters in Detroit, and became general manager central sales in 1943.

Bennett C. Macgregor, formerly manager of sales at St. Louis district, will succeed Mackall at Detroit.

After having had operating experience with various steel companies, MacGregor joined Bethlehem's sales force in 1919 at Cleveland, became manager of structural and plate sales in the Cleveland district, and was made man-

Wartime Conservation—Welding Cables



Welding equipment, itself a critical maintenance tool, requires constant care and maintenance if it is to serve the industry most effectively in prolonging operating equipment life. Especially vulnerable to service mishap is the heavy cable conveying welding current from generator to metal. Requiring heavy copper core and equally critical rubber insulation, it must be guarded against replacement demand if it is to deliver full measure of service.

Equipping the field welding truck with wells into which the leads may be coiled when not in use protects the cables against wear in transit, guards the rubber against unnecessary exposure to strong sunlight, and simplifies the task of unreeling only sufficient lead to reach from generating unit to the job.

Cable in such a carrier is protected against accidental crushing, is not exposed to kinking or cramping, as is the case when carried over a pin or rack, and is not exposed to oil or dirt except when actually in use.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

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The **ORBIT VENTURI TYPE VALVE** is manufactured with Stellite "J" Metal Seats which will not only withstand the abrasion of sand but is also corrosion resistant to all types of crude oil.

Orbit Venturi Type Valve

This valve can be furnished thru all fabricators of Xmas Trees or thru any of your local supply stores at a price comparable to that of leading plug valves **YET** this valve requires no lubrication to effect a seal.

See Pages 2194 to 2211 in 1944 Composite Catalog

Specify

ORBIT VALVES

OIL WELL IMPROVEMENTS COMPANY

TULSA OKLAHOMA

E. F. GAHAN, Export Rep.
500 Fifth Ave., New York 18, N. Y.

ager of sales of the St. Louis district in 1938.

C. H. Cecil has been named to succeed Macgregor at St. Louis, coming to this position from the sales force at Chicago. Cecil started with Bethlehem in 1926 in the open hearth department, transferred to the sales department in 1927 and has served in the Cincinnati and Chicago sales offices.

☆

HAROLD S. KEMP, chief geologist for Glenn H. McCarthy for the past 7 years, has resigned to enter business as consulting geologist and paleontologist, with offices in the Niels Esperson Building, Houston.

☆

EARL M. DANIELS, Hydril Company, has returned to Houston after an extensive trip that included Rochester, New York, Toronto, Tulsa, and Olney, Illinois.

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"They were having trouble with quicksand so they drove pipe with perforated ends into the sand and extracted the water in vacuum. The header is 6"ID steel pipe, approx. 200' long. The 51 intake lines are 1½"ID, 4' apart."

The Dresser Couplings on these lines have been used 15 times.

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Secondary Recovery *Provides* MORE OIL FOR WAR

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Coring Equipment	Supervision
Core Analysis	Installation
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